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REG. U. S. PAT. OFF.

VOLUME 126, No. 26 JUNE 24, 1948

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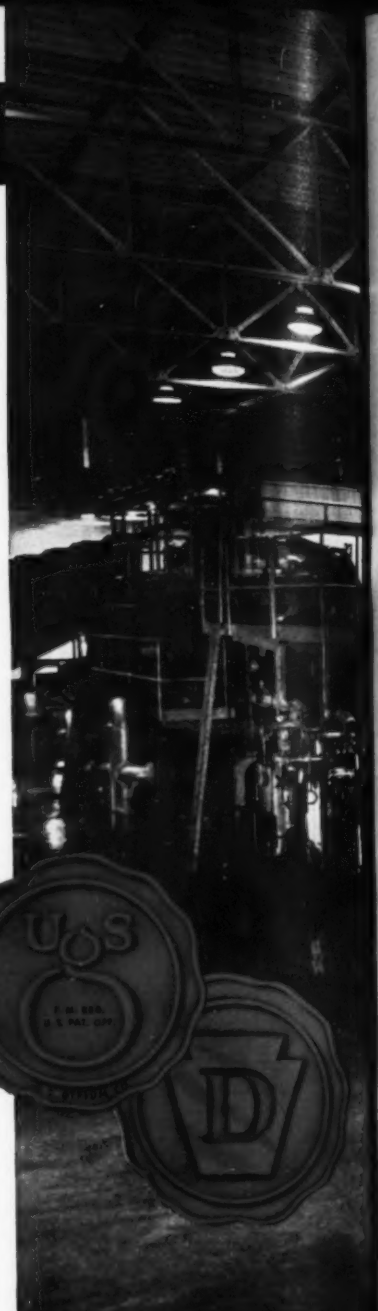

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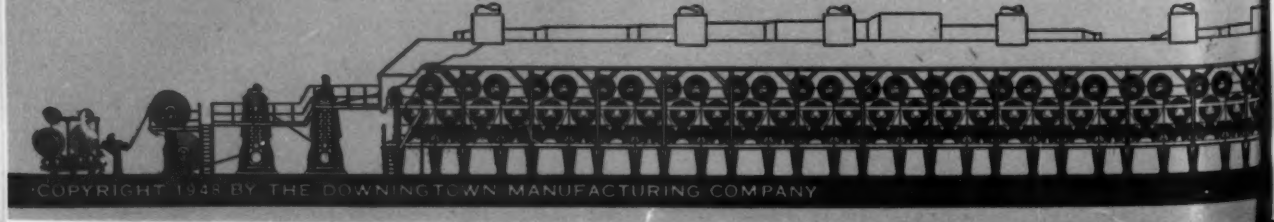

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CALENDAR OF COMING EVENTS

ASSOCIATION EXECUTIVES: Please send us your meeting dates and locations for this column as far in advance as possible. No charge for publication.

JUNE 25-26: Maine-New Hampshire Section, Technical Ass'n., of the Pulp & Paper Industry. Belgrade Lake House, Belgrade Lake, Maine. For hotel reservations, address hotel.

JULY 20: Sport and Field Day, Michigan Superintendents. Gull Lake Country Club, Kalamazoo, Mich.

AUGUST 16-17: TAPPI Plastics Conference. Institute of Paper Chemistry. Appleton, Wis.

AUGUST 18-20: TAPPI Fundamental Research on "Physical Constituents of Wood." Madison, Wis.

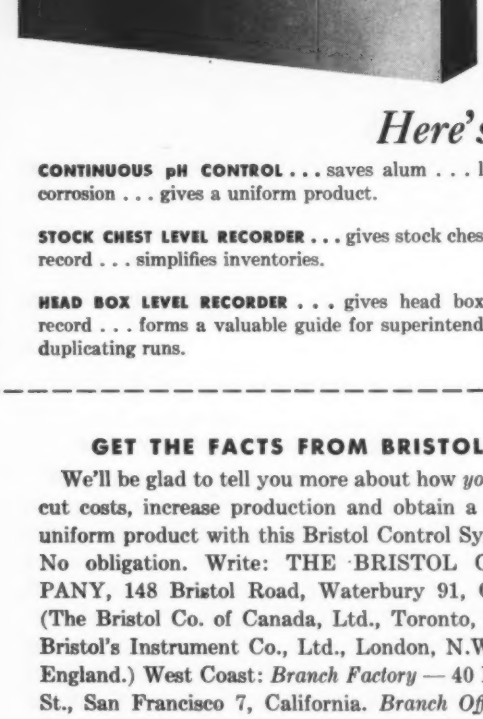
AUGUST 31: Annual Golf Tournament, Chicago Paper Trade Ass'n., Medina Country Club, Chicago, Ill.

Salesmen's Ass'n., of the Paper Industry—Eastern Division —Midston House, New York City. Mondays, 12 noon to 2:00 PM. Resuming in September.

Salesmen's Ass'n., of the Paper Industry—Western Division —Sherman Hotel, Chicago. Mondays, 12 noon to 2 PM. Resuming in September.

Allied Industries Luncheon Club—Second Monday of each month, Commodore Hotel, New York City. 12 noon.

Putting Paper Variables Under Central Control



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Paper TRADE JOURNAL

VOLUME 126, NO. 26 REG. U.S. PAT. OFF. JUNE 24, 1948

Clauson To Report On Scandinavian Pulp

NEW YORK—Karl A. Clauson, secretary of the Ass'n. of Pulp Consumers, will report to association members at regional luncheon meetings, the findings of the six-week trip to Europe from which he returned to the U. S. on June 13.

First of the luncheons will be convened at Hotel Syracuse, Syracuse, N. Y. on June 25, at 12:15 p. m. The second will be held at the Union League Club, Philadelphia, on June 28. Roger Smith Hotel, Holyoke, Mass., will be host to the third on June 29. The final luncheon will be held at the Manchester Hotel, Middletown, Ohio, on July 7.

Reports to Michigan and Wisconsin members will be made during personal mill visits in the latter part of July.

Mr. Clauson left the U. S. for Europe on April 27 and among other points visited London, Paris and Amsterdam. Most of his stay was at Stockholm where he talked with pulp industry leaders and government officials in the interests of his association, and studied current market supply and demand and price prospects.

New Export Schedule 25 Ready

WASHINGTON — Latest information on export controls has been compiled by the Office of International Trade in its Export Schedule No. 25, now ready for distribution. This issue supersedes No. 24, issued last September.

The new issue includes all changes in export regulations up to June 1. A completely new part deals with the special regulations governing trade with the American and British zones of Germany, South Korea and Japan, and includes a partial list of commodities which may be imported into those areas.

Other new sections contain the regulations on licensing for virtually all shipments to Europe, and the regulation which establishes prices as a factor in granting licenses. Other sections have been extensively revised.

Ketchikan Bids Sought

WASHINGTON—The U. S. Forest Service has invited bids on a 300-mile-long strip of land near Ketchikan, Alaska estimated to contain a billion and one-half cubic feet of timber. The sale will be conditioned on establishment of a pulp mill and power plant in the area. Bids must be submitted by August 2.

Forest Service officials stated that the last offering, made in September of 1947, resulted in no firm offers.

Herrlinger Heads P. & T. A.

FRENCH LICK SPRINGS, Ind.—Roth Herrlinger was elected president of the Paper & Twine Ass'n., at the 13th Annual Meeting of that organization here on June 11-12. Robert Knox was elected vice-president and John L. Richey (re-elected) secretary-treasurer and counsel.

Roth Herrlinger

Mr. Herrlinger is president of the Gummed Products Co., Troy, Ohio. Mr. Knox is a partner in the paper merchant firm of Knox & Schneider, Chicago.

At the June 11 morning session, Ralph G. Luff, president of the National Paper Trade Ass'n., and president of the D. L. Ward Co., Philadelphia, presented an outline of NPTA activities now in operation or in contemplation, including the public relations program adopted at the April meeting of the latter organization in New York City. At the same meeting, Wm. G. Leathers, executive assistant secretary of NPTA, presented further details of that group's work and the code of ethics for paper merchants based upon analysis of articles appearing during the past year in the Paper & Twine Ass'n., *Weekly News Letter*. Frank DeVore wound up this meeting with a presentation of the public relations program of the Gummed Industries Ass'n.

At the June 12 session secretary Richey reported that the regular membership limitation of 500 had been reached and that of the 100 associate

(Continued on page 50)

Attorney General Reports Indictments Returned

WASHINGTON—Indictment of eight wallpaper manufacturers, a trade association and six individuals on charges of conspiring to fix prices in violation of the anti-trust laws was announced by Attorney General Clark on June 17.

Mr. Clark said the indictment was returned on that date by a Federal grand jury in Philadelphia and that the Justice Department plans to file a civil suit against the manufacturers and the trade association for an injunction "to prevent the continuation of the illegal practices charged in the indictment."

The indictment charges that specified wallpaper manufacturers, through their institute, "are acting together to restrict competition through the stabilization of the price structure and through a concerted agreement to adopt and enforce resale (distributor) prices. Any restraints which affect such an important segment of the economy cannot be permitted."

The indictment named the Wallpaper Institute, and Walter L. Carver, its secretary-director, of New York City; Atlas Wall Paper Mills, Inc., and its president, Oscar J. Weinbrod of Coal City, Ill.; the Birge Co., Inc., and its president, George K. Birge of Buffalo; J. C. Eisenhart Wallpaper Co., Hanover, Pa.; Enterprise Wall Paper Mfg. Co., and its president, Julius Isaacs of South Langhorne, Pa.; Imperial Paper & Color Corp., and the general mana-

(Continued on page 48)

FTC Order Upheld

CHICAGO—The United States Circuit Court of Appeals on June 19 upheld, with one exception, a Federal Trade Commission order to book paper manufacturers to stop alleged price-fixing. The exception was the Consolidated Water Power & Paper Co., of Wisconsin Rapids, Wis.

On June 30, 1945, the FTC ordered 42 corporations engaged in the manufacture, sale and distribution of book paper, the Book Paper Mfr's. Ass'n., and the officers and representatives of the association to cease and desist from alleged price-fixing and certain specified activities for the alleged purpose of price-fixing.

The respondents petitioned the Seventh Circuit Court here for a review and setting aside of the order.

On June 19, Circuit Judges Sherman Minton and J. Earl Major and District Judge Walter C. Lindley unanimously ruled that the order must be enforced except as to the Consolidated company, in which connection it must be vacated.

The opinion was prepared by Judge Minton.

The petitioners raised two issues. Judge Minton said: "The first is that of the adequacy of the findings (of the FTC) as to facts. The remaining question is whether there is substantial evidence to support the findings as to the facts."

After reviewing arguments, Judge Minton continued:

"Here the petitioners (except Consolidated) are proved to have agreed upon these factors: uniform quantity discounts, uniform finishing differentials, uniform base prices, and a uniform zoning system with uniform zone differentials, all without regard to a particular petitioner's costs of production and distribution.

"The pattern clearly provides a means of fixing uniform prices.

"The petitioners' degree of success in stifling price competition is not a measure of their liability."

Regarding Consolidated, Judge Minton observed that since 1935 this firm had been manufacturing coated paper by a patented process, whereby the manufacture and coating of paper was done in a single operation at great speed. This process gave Consolidated a competitive advantage over the other manufacturers, he declared.

"Consolidated's scheme was to compete with the other petitioners by offering its coated paper within the other petitioners' uncoated (cheaper) price ranges. In doing this it adopted the latters' trade customs for uncoated paper —to meet competition. Incidental facts * * * cannot make out the pattern of conspiracy found (by the FTC)."

Judge Minton, commenting upon what he took to be the manufacturers' view that the FTC's finding of conspiracy was "indefinite," declared:

"The evidence here which supports the finding of combination and conspiracy is legion; all the petitioners expressly pledged their continued cooperation with the association upon the termination of NRA; the petitioners continued to file price changes with the association on forms provided by the association therefor and these changes were disseminated by the association; many petitioners mailed their new base prices directly to other petitioners; the association prepared standard contract forms containing specified provisions relating to ultimate prices and most of the petitioners used these forms with or without minor variations, and the association held frequent and well attended meetings.

"The petitioners do not controvert the truth of this evidence, but address arguments as to its weight and the inferences that should be drawn therefrom."

The United States Government was one of the customers affected by the petitioners' alleged price fixing practices, it was noted.

"The (Federal Trade) Commission found that there was uniform though sealed bidding to the United States Government Printing Office, and that this was the result of agreement," said Judge Minton.

"This finding is buttressed by correspondence, the testimony of petitioner Allied's (Allied Paper Mills) merchant-agent whose price-cutting resulted in the petitioners' refusal to fill the order he had obtained, and the testimony of the director of purchases of the Government Printing Office."

Patent Office Swamped

CLEVELAND—Many war and postwar developments are being kept out of use because of the inability of the U. S. Patent office to cope with the mounting flood of patent applications, which has almost doubled in the past four years, says H. A. Toulmin, Jr., patent attorney. "Applications are being received at an annual rate of 70,000, nearly double the 1943 rate," Mr. Toulmin reports.

Loss of examiners experienced in special fields and increasing complexity of cases, which make simple examinations impossible, are two reasons cited by M. Toulmin for the fact that today 150,000 cases await action and the examination of applications lags two years behind schedule.

Other factors responsible for the jam are: (1) Overcrowded facilities. At present 40 percent more personnel occupy 20 percent less space than before the war. (2) Inexperienced examiners. Today, 40 percent of examiners have less than two years' service. (3) Increasing volume of literature to be searched. Increasing numbers of technical publications, books and patents lengthen time of search. (4) High proportion of new cases in work load. Initial actions require more time than final actions. (5) Rising importance of validity. If careful job is not done, patents held invalid by courts will cause lack of confidence in patent system.

Import Duties Tabulation Ready About July 1

WASHINGTON — The Tariff Commission expects to have ready about July 1 a publication showing all import duties of the United States in effect June 15, 1948.

The book is the joint work of the Commission and the U. S. Bureau of Customs, and will sell for $2 per copy, obtainable from the Superintendent of Documents, Government Printing Office, Washington, D. C.

National Gypsum Planning Imperial Valley Mill

BUFFALO, N. Y. — National Gypsum Co. plans to erect a $1,000,000 mill in California's Imperial Valley area where a large gypsum rock deposit has been acquired from the Government.

Chemicals Headed Upward

NEW YORK—The 12-billion-dollar chemical industry will raise prices on third-quarter contracts to offset rising labor and freight costs, a generally authoritative source predicted to *Paper Trade Journal* on June 18.

The increases will range from "small" to "substantial." While there may be exceptions, the number of important chemicals which will disregard the trend will be insignificant.

Among increases announced are those for most organic dye intermediates, oxalic acid, bichromates, trichloroethylene, sodium silicate, sodium bicarbonate, caustic soda, soda ash, chlorine, menthol, metallic sodium, calcium arsenate, cyanide compounds, and superphosphate. It also is felt that increases soon will be announced for many of the basic coal tar chemicals and derivatives such as phthalic anhydride.

Prices for synthetic detergents have been increased and dyestuffs have climbed with them.

While many chemical companies have reached favorable agreements with employes thus far this year, there still are many contracts to be negotiated.

Higher coal costs would exert heavy inflationary pressure.

Chemical producers are reported to be anticipating higher coal prices in contracts for future delivery.

Paper Cups and Containers Classified—Catalogued

NEW YORK—The Paper Cup & Container Institute, 1790 Broadway, has published an alphabetical "directory" of the foods and drinks that can be served in paper, with recommendations as to the size, shape and style of container designed for each. Excellent illustrations are a feature of particular value.

Members of the Institute include American Lace Paper Co., Milwaukee; American Paper Goods Co., Kensington, Conn.; Boston Drinking Cup Co., Dedham, Mass.; Continental Can Co., Inc., Paper Division, ..ew York; Cupples-Hesse Corp., St. Louis; Dixie Cup Co., Easton, Pa.; Harvey Paper Products Co., Sturgis, Mich.; Herz Mfg. Co., Herz Cup Co. Division, New York; Lily-Tulip Corp., New York; Milwaukee Lace Paper Co., Milwaukee; C. A. Reed Co., Williamsport, Pa.; Sealright Co., Inc., Fulton, N. Y.; Sutherland Paper Co., Kalamazoo, Mich.; and United States Envelope Co., Paper Cup Division, Worcester, Mass.

Portugal Interested In U. S. Paper

WASHINGTON — There may be some opportunity for United States manufacturers to increase their share in the Portuguese market for paper, the Department of Commerce reports.

Merchants have expressed "definite interest" in United States paper products, the department added, and would like to receive samples, particularly of wrapping paper, including fancy, greaseproof paper, sulphite, white and colored; printing stock, tissue and toilet papers, cellophane, writing paper including bond, ledger and similar types.

France and Belgian exporters have recently shown samples, the department reported, and received sizeable orders. Pulp is being supplied exclusively by Sweden.

Since February this year, it was recalled, all imports have been subject to prior authorization by the Portuguese Government.

Congress Aids Anti-Stream Pollution In Closing Session

WASHINGTON — Carrying increased loan provisions for State and municipal anti-stream pollution activities, House and Senate adopted a compromise water-pollution control bill in the closing hours of the session.

House and Senate earlier had passed divergent bills, in the case of the Senate, the Barkley-Taft proposals embodied in S-418. As revised in conference between representatives of the two bodies the bill was substantially the House version. The House adopted the conference report Friday, June 18, and the Senate followed on Saturday morning.

The principal last minute changes by the conferees provide for loans to States, municipalities and interstate agencies up to a top-authorization of $22,500,000 for each fiscal year, instead of the $20,000,000 limit originally provided in the House bill, and individual loans for treatment works, etc., are increased to $250,000, or one-third of the estimated cost of the works, whichever is smaller, instead of $200,000 as initially drafted.

The $22,500,000 authorization limit applies to each of five fiscal years, July 1, 1948 — June 30, 1953. The bill was confined to work on interstate streams, and restricts loan provisions to the five fiscal years listed. No loans or grants were authorized for private industries.

WEST VIRGINIA BECOMES 20TH TREE FARM STATE

West Virginia officially became the 20th Tree Farm State in the nation on May 22 when the 41,000-acre tree farm of the New River Co. was dedicated near Beckley, W. Va. . . . More than 100 forestry leaders and landowners attended the ceremonies conducted at one of the company's plantations started in 1931 and which now cover 700 acres. . . . The Tree Farm dedication climaxed the first annual meeting of the West Virginia Forest Council organized a year ago. West Virginia Tree Farms are sponsored by the council in cooperation with the Conservation Commission of West Virginia and the Appalachian Hardwood Mfrs., Inc. . . . West Virginia's entry into the Tree Farm System brings the Nation's total to 15,211,851 acres. Pictured above is Wilson B. Sayres.

Sewage Proposal Raises Storm In Worcester

WORCESTER, Mass.—After a year of intermittent discussion on how to protect the new two-million-dollar sewage treatment plant, a set of regulations approached final passage here following a stormy session June 5 in the City Council Sewer and Ordinance Committees.

Only after the chairman of the two committees — Alderman Thomas F. Farrell — and three other members bolted the meeting, was a vote taken recommending passage of the rules which would have definite effect on paper manufacturers in this area.

Similar rules have been pigeon-holed in committee since last September. Those voted out of committee on this occasion contained an important amendment providing that decision of the Commissioner of Public Works relative to enforcement of the rules may be appealed to a five-man board.

The board would consist of the Commissioners of Public Works and Public Health, the City Solicitor, and two citizens to be appointed by the Mayor.

A second major change in the original proposal will allow industry to use the old sand filter beds at the treatment plant for dumping strong acid wastes. The wastes will be trucked or piped to the beds by the manufacturers.

AMAPI Incorporated

Robert A. Stough, president of the Ass'n. of Mfrs. Agents of the Paper Industry, reports that the organization has been incorporated as a non-profit institution under the laws of Illinois.

Purposes of the association are to promote the independent manufacture's agent in the paper industry.

All those concerned are invited to use the facilities of the Association which now includes many important paper men throughout the United States, President Stough states.

National Folding Box Co. Plans $350,000 Expansion

NEW HAVEN, Conn.—National Folding Box Co. has completed plans for a $350,000 three-story addition to its plant at James, Main and Lombard Streets.

Congress Committee Awards Third-Quarter Paper Contracts

WASHINGTON — Awards were announced on June 15 by the Joint Congressional Committee on Printing for paper for use of the Government Printing Office for the three-month period beginning July 1. Bids were opened on June 7. The awards are as follows:

Paper Awards

No. 2—Walker-Goulard-Plehn Co. 9.797.
No. 3—Mudge Paper Co. 11.66—50,000 lbs.; Paper Corp. of U. S. 11.21—250,000 lbs.
No. 4—Mudge Paper Co. 11.66—100,000 lbs.; Paper Corp. of U. S. 11.21—125,000 lbs.
No. 5—Paper Corp. of U. S. 11.21—225,000 lbs.
No. 6—Wilcox-Walter Furlong Paper Co. 10.185.
No. 7—Wilcox-Walter Furlong Paper Co. 10.185.
No. 8—Wilcox-Walter Furlong Paper Co. 10.185.
No. 9—Wilcox-Walter Furlong Paper Co. 10.185.
No. 18—Walker-Goulard-Plehn Co. 12.43
No. 19—Whitaker Paper Co. 10.68.
No. 20—R. P. Andrews Paper Co. 11.57.
No. 21—R. P. Andrews Paper Co. 8.82.
No. 23—Paper Corp. of U. S. 13.25.
No. 24—John W. MacNeil, Inc. 17.49.
No. 26—Whitaker Paper Co. 17.35.
No. 27—Whitaker Paper Co. 17.45.
No. 33—Mead Sales Co. 11.34.
No. 34—R. P. Andrews Paper Co. 8.85.
No. 35—Mead Sales Co. 11.07.
No. 37—Mead Sales Co. 10.05.
No. 40—Mead Sales Co. 10.97.
No. 41—Walker-Goulard-Plehn Co. 13.30.
No. 44—R. P Andrews Paper Co. 10.19.
No. 45—Old Dominion Paper Co. 13.948.
No. 46—Howard Paper Mills, (Aetna Div.) 13.72.
No. 48—Birmingham & Prosser Co. 13.85.
No. 49—D. L. Ward Co. 19.24—120,000 lbs.; Walker-Goulard-Plehn Co. 19.44—100,000 lbs.; R. P. Andrews Paper Co. 19.70—20,000 lbs.
No. 51—Paper Corp. of U. S. 14.49.
No. 52—R. P. Andrews Paper Co. 11.07.
No. 53—Whitaker Paper Co. 11.95—400,000 lbs.; D. L. Ward Co. 12.84—100,000 lbs.; Barton, Duer & Koch Paper Co. 11.95—400,000 lbs.; R. P. Andrews Paper Co. 10.49—200,000 lbs.
No. 54—R. P. Andrews Paper Co. 10.05.
No. 55—R. P. Andrews Paper Co. 9.46.
No. 57—Paper Corp. of U. S. 13.38.
No. 58—Paper Corp. of U. S. 12.78.
No. 71—Stanford Paper Co. 17.52.
No. 78—Cauthorne Paper Co. 17.92; Cauthorne Paper Co. 18.22; Cauthorne Paper Co. 18.47.
No. 79—Stanford Paper Co., 19.49.
No. 83—Walker-Goulard-Plehn Co. 17.23.
No. 86—Whitaker Papeer Co. 25.10.
No. 87—Old Dominion Paper Co. 22.728.
No. 89—Old Dominion Paper Co. 24.948.
No. 102—Paper Corp. of U. S. 13.40.
No. 106—Butler Co. 16.415.
No. 107—Birmingham & Prosser Co. 16.415.
No. 108—Mudge Paper Co. 16.415.
No. 109—Graham Paper Co. 15.48—100,000 lbs.; Frank Parsons Paper Co. 15.45—140,000 lbs.
No. 114—Birmingham & Prosser Co. 16.81.
No. 130—Mudge Paper Co. 29.59.
No. 151—Walker-Goulard-Plehn Co. 14.49.
No. 154—Walker-Goulard-Plehn Co. 16.24.
No. 155—Bulkley, Dunton Co. 16.24.
No. 158—Walker-Goulard-Plehn Co. 18.24.
No. 182—Whitaker Paper Co. 10.81.
No. 188—Howard Paper Mills (Aetna Div.) 17.38.
No. 191—Howard Paper Mills (Aetna Div.) 18.38.
No. 196—Walker-Goulard-Plehn Co. 29.00.
No. 203—Whitaker Paper Co. 13.04.
No. 206—R. P. Andrews Paper Co. 19.44.
No. 208—Frank Parsons Paper Co. 8.50.
No. 210—No award.
No. 252—R. P. Andrews Paper Co. $21.92—per M sheets.
No. 306—Barton, Duer & Koch Paper Co. 11.75.
No. 307—Barton, Duer & Koch Paper Co. 13.00.
No. 310—Paper Corp. of U. S. 14.35.
No. 325—Whitaker Paper Co. 8.42—3,600,000 lbs.; Mead Sales Co. 10.00—200,000 lbs.
No. 326—Whitaker Paper Co. 8.42—200,000 lbs.; Mead Sales Co. 10.00—200,000 lbs.; R. P. Andrews Paper Co. 8.28—2,400,000 lbs.
No. 352—R. P. Andrews Paper Co. $34.354 per 100 sheets.
No. 360—R. P. Andrews Paper Co. 4.40.
No. 366—R. P. Andrews Paper Co. 5.69.
No. 367—R. P. Andrews Paper Co. 5.69.
No. 368—Consolidated Paper 9.57; Consolidated Paper Co. 9.68; R. P. Andrews Paper Co. 9.75.
No. 369—Mead Sales Co. 5.975; Mead Sales Co. 5.60.

Envelope Awards

No. 4—Oles Envelope Corp. $1.60 per M.
No. 9—Oles Envelope Corp. $2.20 per M.
No. 17—Oles Envelope Corp. $3.09 per M.
No. 22—Oles Envelope Corp. $6.60 per M.
No. 24—Oles Envelope Corp. $7.15 per M.
No. 26—Oles Envelope Corp. $11.58 per M.
No. 30—Cauthorne Paper Co. $15.33 per M.
No. 40—Cauthorne Paper Co. $0.81 per M.
No. 41—Cauthorne Paper Co. $0.87 per M.
No. 43—Cauthorne Paper Co. $1.21 per M.
No. 45—Cauthorne Paper Co. $2.11 per M.
No. 80—Cauthorne Paper Co. $1.88 per M.
No. 81—Cauthorne Paper Co. $2.03 per M.
No. 82—Oles Envelope Corp. $2.48 per M.
No. 83—Cauthorne Paper Co. $2.60 per M.
No. 106—Howard Paper Mills (Dayton Envelope Div.) $6.86 per M.
No. 108—Howard Paper Mills (Dayton Envelope Div.) $8.48 per M.
No. 152—Howard Paper Mills (Dayton Env. Div.) $2.55 per M.
No. 153—Howard Paper Mills (Dayton Env. Div.) $3.77 per M.
No. 155—Howard Paper Mills (Dayton Env. Div.) $4.13 per M.
No. 159—Howard Paper Mills (Dayton Env. Div.) $5.40.
No. 171—Howard Paper Mills (Dayton Env. Div.) $4.72 per M.
No. 172—Howard Paper Mills (Dayton Env. Div.) $6.74 per M.
No. 178—Howard Paper Mills (Dayton Env. Div.) $7.57 per M.

Tully Tunnel Functions

ROYALSTON, Mass.—The Tully River has started to flow into the six-foot tunnel of the $759,762 Tully Dam.

The dam is part of the Connecticut River Flood Control project—started in April, 1947. Tully is one of 20 dams and reservoirs included in the system for flood control in the Connecticut River valley.

Together with the Birch Hill Dam, it will control an area of 205 square miles, which is believed sufficient to prevent flood damage in Athol and lower Millers River Valley towns.

The Tully River, which rises in New Hampshire, has a drainage area of 74 square miles, of which 50 will be controlled by the dam which is of the rolled filled earth type, and when completed will be 1,570 feet long and rise 65 feet above the stream bed. The gate-controlled tunnel was hewn from solid rock. Inability to obtain gates—which will cost $66,000—has delayed the project to some extent.

A 225-foot spillway is being cut through earth and rock, and is designed to pass 32,700 cubic feet of water per second, which is said to be six times more than the discharge at the dam site during the 1936 flood, the largest flood on record here.

Park Leaving Marvellum

HOLYOKE, Mass.—Resignation of Maurice A. Park of Springfield as vice-president and director of the Marvellum Co., of Holyoke, effective July 3, was announced June 11. Richard S. Fay of South Hadley, assistant to Mr. Park since 1936, will take over the position of manager of the cover and specialty department, which has been handled by Mr. Park.

Mr. Park said he would move to Los Angeles, about July 15, and continue in the paper industry there. A native of Worcester, he is a graduate of the Worcester schools and attended Columbia University.

Prior to joining the Marvellum Co., in 1936, Mr. Park was vice-president and general sales manager of the Holyoke Card & Paper Co., in Springfield.

A former police commissioner in Springfield, he is a past president of the Paper Makers' Advertising Association, and is at present active in the Cover & Text Paper Ass'n and the Specialty Paper & Board Affiliates. He is also a member of the Boston Paper Trade Ass'n. and the Paper Club of New York.

Mr. Park is president of Management Consultants, Inc., of Boston.

Mr. Fay has been associated with the Marvellum Co., for 25 years, and is secretary of the Paper Makers' Advertising Ass'n.

Swiss Paper Executive Visit Holyoke

HOLYOKE, Mass.—E. W. Hockenjos, vice-president of the De la Papeterie de Pont Co., of Bale, Switzerland, and Albert H. Zeigler, president of Albert Zeigler & Co., of Grellingen, Switzerland, toured this city's paper-manufacturing plants on June 16.

The visitors, who return to Europe by plane shortly, expressed "astonishment" at the diversification of the American paper industry.

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BLEACHED AND UNBLEACHED
CHEMICAL AND MECHANICAL WOOD PULP

The North Woods mosquitoes in Paul Bunyan's day were really big, rough, and tough. To stop their drilling holes in the copper camp kettle, Paul clinched their snoots inside with a hammer. So the mosquitoes flew off with the kettle.

A reproduction of this incident from the fabulous life of Paul Bunyan—the thirty-first of a series—will be sent on request. It will contain no advertising.

Begin Construction Surveys For New Brunswick Mill

TORONTO, Ont.—According to information released by Ewart C. Atkinson, a barrister of Fredericton, N. B., preliminary surveys for construction of the new 1,000-tons-a-day $65-million newsprint and kraft mill near Lepreau, N. B., for the Maritimes Pulp & Paper Corp., will start early in July.

The Maritimes Pulp & Paper Mills Corp., was incorporated by special Act of the Legislature this year. Capital stock will consist of 350,000 shares of $100 each, and a bond issue of $30 millions will be floated later, probably in the United States, Mr. Atkinson states. The capital is subscribed on the basis of $100 per ton annual production, with the right of the subscriber to receive annually for his personal requirements one ton of product for each share held. Large newspaper publishers and kraft users in the U. S. and overseas are interested in and are behind the project. To protect principals, no individual names will be mentioned until the mill is ready to operate. Output of the mill will be used to take care of expansion requirements of the publisher-shareholders and so should not affect existing contracts, Mr. Atkinson states.

In the bill of incorporation the incorporators were listed as: John L. Raymond, publisher's agent; W. F. Keene, publisher's agent; and I. B. Purdy, all of New York; Frederick C. Bagley of Augusta, Maine, paper manufacturer; and Mr. Atkinson.

The company proposes to build at or near Lepreau (a small village in Charlotte county) on the Bay of Fundy, a 1,000-ton-per-day tidewater mill divided into 500 tons newsprint and 500 tons kraft pulp. Power for the mill will be generated by coal from Minto and Nova Scotia coal fields. The company has under control large forest areas in Eastern Canada and in particular in New Brunswick and Nova Scotia. The mill will require about 400,000 tons of hardwood and softwood pulpwood per year which, can be brought to it by water and rail.

The company plans to erect near the mill a modern townsite for its employes and allied businesses. Consulting engineers are Stadler, Hurter & Co. of Montreal, with work of surveys and plants under the direct supervision of A. T. Hurter, M.E.I.C.

Barring unforeseen difficulties it is expected the mill will be in production by January, 1950. General manager of the new company will be Frederick C. Bagley.

An average cost of $65 a ton for newsprint, delivered, is estimated by the sponsors, compared with the current base contract price of $96 in the U. S. On this basis publishers would regain their original investment of $100 a ton in four years after the mill gets into production.

Participating publishers will own the entire equity stock of the company and will at all times, promotors say, receive their newsprint requirements at cost, to the extent of their participation in the company's capitalization. In addition, all profits will accrue to the publishers who are the shareholders.

Fiberglas-Reinforced Gummed Paper Tapes

TOLEDO, Ohio—A Fiberglas yarn, for use in reinforcing gummed paper tapes, is announced by the Owens-Corning Fiberglas Corp., following developmental activities carried on cooperatively with the Atlantic Gummed Paper Corp., Brooklyn, N. Y.

The strands of yarn are laid parallel to each other between two sheets of asphalt bonded kraft paper. The small diameter of the glass yarns permits a tight bond between the two sheets, permits use of a minimum amount of asphalt to secure bond, and results in a smooth, flexible construction having high tensile strength and tear resistance, it is stated.

Fiberglas yarn cannot absorb moisture and therefore, does not transmit between the sheets of paper, moisture or vapor likely to cause delamination. The smooth surface of the tape, due to the small yarn diameter, assures good adhesion of the gummed surface.

The tape, which Atlantic Gummed Paper Corp. calls Carpac, is intended for miscellaneous packaging purposes, including tire wraping and securing rug rolls for shipment.

Probst Heads Keith Operations at Turners Falls

TURNERS FALLS, Mass.—Appointment of T. Richard Probst of Greenfield as vice-president in charge of operations, and his re-election as assistant treasurer, featured the annual meeting of the board of directors of the Keith Paper Co., June 16.

Probst was acting assistant manager and assistant treasurer during the past year. Paul E. Hodgdon of Greenfield was re-elected president-treasurer, and John W. Smead was named a vice-president. W. K. Prutzman will serve again as assistant-treasurer and clerk. Directors re-elected were Joseph T. Bartlett, E. J. Costigan, Jr., Phil S. Dickinson, Kenneth S. Dickinson, Max M. Mason, William L. Ross, Smead, John M. Max and Hodgdon.

Mr. Hodgdon released the following report: "Operation for the past year were carried on at a rate of 86 percent of capacity on the three rag-content paper machines, while the fourth machine, making a special grade of tissue, operated at 100 percent of capacity. However, such curtailed operation resulted in a fair profit.

"Sales for the year amounted to $3,285,000, which exceeded the previous year's figure in spite of the lower production. The manufacture of a greater tonnage of higher priced papers combined with the increase in selling price made this possible. A sum of $102,000 was spent for maintenance and repairs, while $57,000 was used for capital additions. Such expenditures are necessary for the adequate and efficient operation of the mill on both a short- and long-range policy.

"There has been a definite downward trend in the demand for high-quality rag-content paper, which may force the maintenance of other grades if operations are to continue at full capacity.

"The present ratio of current assets as against current liabilities is 2.8 to one, as contrasted with 1.6 to one a year ago."

Ottawa River Co. Expanding Flint Plant

TOLEDO, Ohio—Ottawa River Paper Co., has announced plans for expansion of its new corrugated container plant at Flint.

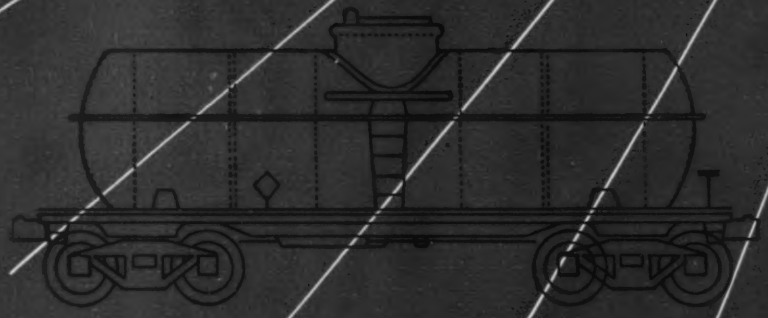
Fields Vacationing

BOSTON, Mass. — Charles W. Fields, president of Baird & Bartlett Co., box board dealers, who is passing a short vacation in Bath, Me., is expected to return about June 25.

FOX CO. DISPLAY ROOM

Fox Paper Co., Lockland, Ohio, has opened the sales display room pictured herewith, for the benefit of paper merchants selling Fox products.

in size the trend is to economy



Every step along the way, Hercules' papermaking chemicals are planned to give maximum economy to paper and board mills, no matter what their requirements may be. This trend extends even to packaging. Hercules Rosin Size, for example, is obtainable in drums, bags, or tank cars, and in paste or dry forms. An increasing number of paper mills are switching from paste size in drums to Dry Rosin Size in bags, because of the convenience in handling. Others, because of their particular needs, prefer Hercules Paste Rosin Size in tank cars.

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Wisconsin Conservation Comm. Discusses Five Problems

OSHKOSH, Wis.—The Wisconsin Conservation Commission met at the City Hall in Wisconsin Rapids on June 9 to discuss five problems. The meeting was attended by legislators, industry members, loggers and other interested persons.

Subjects discussed were: (1) The need for including additional areas within organized forest protection districts; (2) Forestry nursery administration and expansion; (3) A research program in cooperation with the state Agricultural Experiment Station, including forest insects and tree diseases; (4) Progress in private forestry and additional incentives; and (5) Limitation on cutting small timber.

Chairman Smith declared that the Commission desired to develop the duty of the State and the duty of the public and to decide what legislation, if any, is needed. He called upon Chief Forest Ranger Neil LeMay to present the subject of including additional areas within Forest Protection Districts. Mr. LeMay stated that the intent of the legislature at the time the Forest Crop Law was passed was to get people to hold their lands, that the boundaries of the forest protection districts were established more or less arbitrarily and there had been subsequent requests for including additional areas especially where farm lands were going back into timber. He cited portions of Marathon, Portage, Waushara, Waupaca and Eau Claire Counties as instances.

Discussion produced the information that no further funds would be involved, that the expansion of fire protection districts would not dilute or interfere with the present fire protection effort and that there was no immediate connection betwene the benefits of the Forest Crop Law and requests for inclusion of land in forest protection districts.

Sentiment on this subject seemed toœ be well summarized by Norman Stone of Mosinee, who declared that extension of forest protection districts would encourage tree planting and the Department had best accomplish this without further delay.

The subject of nurseries was expounded by C. L. Harrington, superintendent of forests and parks and William Brener, state nursery supervisor.

Mr. Harrington said that the State for many years had been growing trees for planting purposes such as property improvement. Now timber, under current fire protection effectiveness, has arrived at the comparability of a good insurance risk. The State under present facilities is incapable of producing annually 50 million plantable trees and when the next good crop of seed is accumulated a seed reserve should be set up. He said industry could be helpful by arranging their cutting cycles to provide for easier gathering of seed. He added that there had been no driving campaigns for tree planting, that production was simply based on expected demand.

Mr. Brener called attention to the extensive planting of trees during the CCC program which occasioned an output of as high as 40 million trees in one year. During the war production dropped to its present volume of around 12 million. He said the Department has a good supply of trees now—in fact an over-supply of some species, but there has been a shortage of Norway pine.

D. C. Everest said the growing of trees has been a mishandled subject and that blame is due to industry as well as to the legislature. Through shortsightedness 25 years of tree growth has been largely lost. The economy of Wisconsin represented in the pulp and paper industry should be better protected by a greater volume of local wood, Mr. Everest asserted.

Frank Fixmer suggested the Department conduct an annual survey as to the volume and species needed and Mr. Harrington readily assented to this as practical and a good idea.

E. L. Knoke of Wild Rose, told of voluntary planting which had been done in his neighborhood.

Stanton Mead described the need for converting areas now bearing a growth of weed trees to more desirable species and the education work being conducted by Trees for Tomorrow.

J. H. Stoeckler repeated the opinion of a representative of the French Paper Industry, who stated that our small timber owners need more technical advice.

Responding to a question with respect to the adequacy of the budget to provide for the proposed expansion (which is to include an additional nursery in Southern Wisconsin) Chairman Smith assured the meeting that revenues for this purpose would be adequate.

Mr. Harrington stated that it had been the policy of the Commission to cooperate in research with the University which was equipped with personnel and facilities and that all of the work was cleared through the Office of State Entomologist; in other words, the Commission merely contributes a sum of money. Present research includes studies in forest pathology, insect damage, soils and genetics. Reference was made to a recent Federal enactment for cooperation on disease and insect control.

There was discussion on behalf of an affirmative program which would follow up the results of this scientific research, cost being regarded as a matter of only incidental concern. Mr. Kilp recommended that entomologists be available in the field at ranger stations. Mr. Hurst advocated an organization to provide the proper treatment for insect infestations at the right time. Mr. McLaren urged that insect control be installed under the Forest Protection set-up.

F. G. Wilson told of the benefits to small woodlot forestry. He stated that the wood-using industries of Wisconsin have 417,000 acres of land under management methods approved by the Commission. He related the study made two years ago by George Werwein which recommended reduction of assessments on Forest Crop land (appending his judgment that now was not the time to pursue this recommendation). He said there are are 150,000 acres of privately-owned land under the Forest Crop Law. As assessors revise valuations upward on growing timber this law may be found to be a worthwhile instrument.

Mr. Stone thought the reduction of assessment recommended in the Yerwein report might be an inducement to industry to expand its forest land acreage.

Ivan Branham questioned whether there is an incentive to plant trees in the light of winter kill which occurred last winter.

Mr. Everest related the history of the Forest Crop Law which he said should have been on a percentage basis rather than a flat rate per acre.

Mr. Wilson stated that the first cutting bill introduced in the last session of the Legislature was rather well received. This provided that cutting standards were to be fixed by the Commission. To meet objections of critics, however, it became necessary to write definitions, after which the bill wound up with no support. He declared that there was a continued public interest, that about one-third of the fire protection money is derived by mill tax from Milwaukee and vicinity and these residents have a legitimate complaint if the timber so protected is cut prematurely.

Mr. Kilp predicted the same opposition in the future as in the past to cutting regulation. He stated the Federal Government had lowered the diameter limit for cutting to 3″ or 3½″. Two hundred and seventeen sticks to the cord and a cutting cost of 8 cents per stick would amount to $17.00 per cord for cutting, whereas the prevailing price on Jack Pine is $15.50 loaded on cars, an uneconomic procedure. He reiterated the necessity of a law to prevent the cutting of undersized wood. The Conservation Commission should take a deeper interest in the problems of the paper industry and assist in the planning for an adequate supply so it will be unnecessary to continue to depend on Montana and Canada, Mr. Kilp pointed out.

Mr. Stone said that pulp mills are obliged to go outside Wisconsin for pulpwood.

Mr. Everest said the paper industry

(Continued on page 22)

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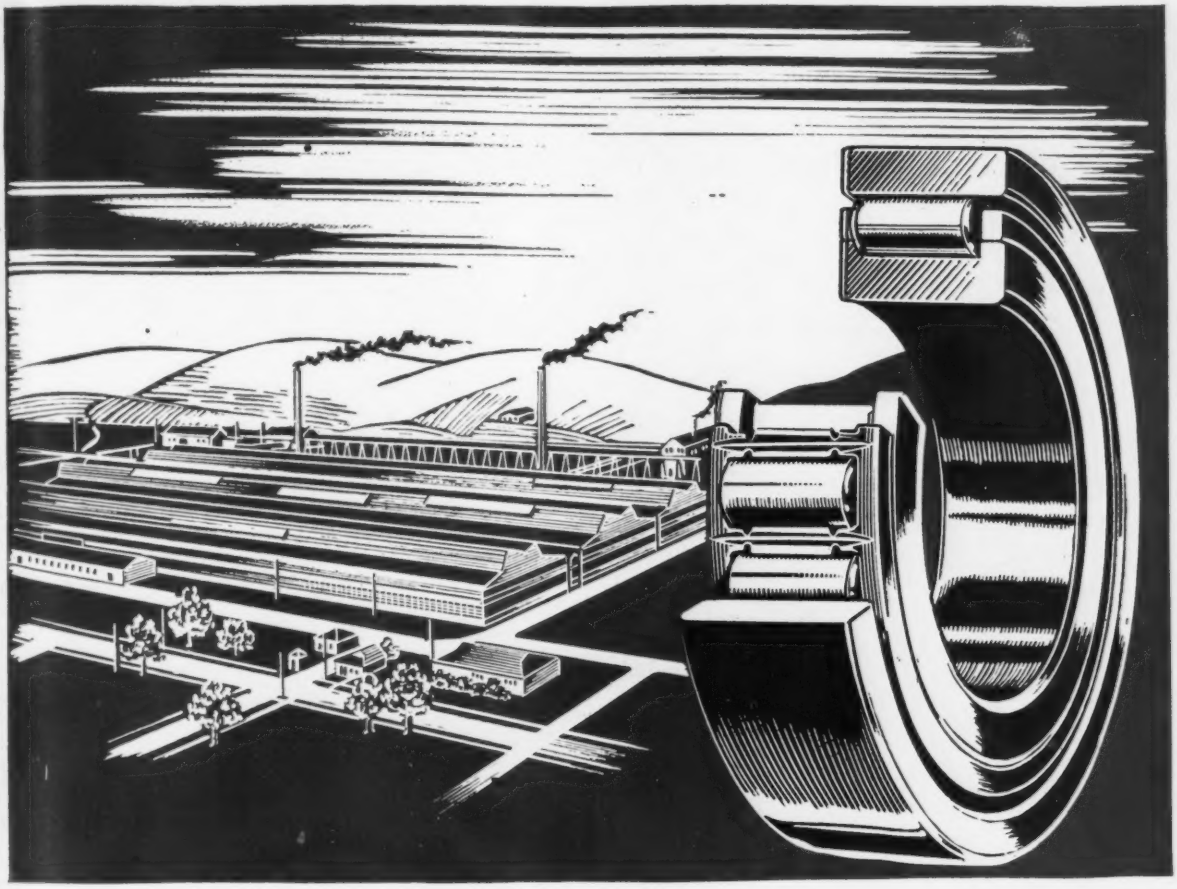

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. . . *Tycol Acylkup Greases* are water-repellent and blended with the finest calcium soap, enough to make every application "stay put" at all times.

. . . *Tycol Acylkup Greases* have a smooth, non-fibrous structure that permits easier application in grease guns and central lubricating systems.

. . . *Tycol Acylkup Greases* safeguard precision anti-friction bearings and heavily loaded gears alike . . . *save* by standardizing on Tycol!

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Wisconsin Conservation

(Continued from page 20)

is third in importance in the state. It deals with the sole national resource that is replaceable and there is no economic substitute for paper. At present there is little comparison between the paper and other woodusing industries. His company (Marathon Corp.) and an associate manufacturer, is spending 30 million dolars for facilities in Canada. He traced the transition of paper making based originally on spruce, later hemlock, then jack pine and finally aspen. He recalled a meeting in 1928 where similar speeches and declarations were made, but little was done about it.

Director Swift responded that conservation is no longer a pleasant hobby but is now a matter of economic life and death. He declared that there is tremendous future in Wisconsin idle lands and the urgency of the situation had paved the way for the day's frank discussion. He said the State can afford to pay a lot of money to retain the benefits of forest industries and in his opinion the problem of the deer herd and controlled cutting are the two most important matters of conservation.

He recommends further that the nursery program be reorganized with more help to Mr. Brener and a transplanting nursery in South Wisconsin.

Summary

Commissioner Aberg summarized the meeting by declaring a need for enlarging the fire protection areas which a change of land use has made necessary. Nature will not produce where there is nothing to work with and the planting program has dwindled to a pitiful amount. The inducement of private owners to plant is the salvation of their business. This is in spite of the fact that Wisconsin is now producing and planting more trees than any other state. The Forest Crop Law imposes a guarantee on the limit of taxes and two million acres of county forest land is now under this law. Cutting regulation is a hearty perennial and the State has some interest in land in which it has expended a subsidy.

Chairman Smith recommended appointment of a committee from the lumber industry and the paper industry to meet with executives of the Conservation Department for further consideration of these matters.

Conclusions

Sense of the meeting was heartily in favor of including the additional areas within forest protection districts as well as the proposed expansion in the forest nursery situation. (Due to fiscal difficulties the industry has resolved to provide some active assistance in the the procurement of seed.)

There was a wide demand to improve the research angle from the standpoint of combating insect and disease infestations in the field. The laboratory and administrative work constitute a distinct advance in Wisconsin forestry but a more positive application of research in the field is demanded.

Private forestry showed a healthy expansion but there is still opportunity for more development along this line and the services of the district foresters should be extremely helpful to the smaller timber land operator. There seems to be a slight conflict of opinion as to whether incentives in the way of Forest Crop Law assessments would be helpful at this time.

There are proposals with respect to an inducement method for limiting the cutting of undersized timber, such as concessions on taxes, details of which were not explained.

A stirring challenge to this meeting was Mr. Everest's declaration that accomplishments are so far short of necessities. It is incumbent upon those interested to be certain that progress during the next 25 years is more adequate, he declared.

Union Bag Advances Richard C. Burton

NEW YORK—Richard C. Burton, assistant director of corrugated container sales of the Union Bag & Paper Corp., has been appointed director, succeeding Walter T. Sheldon, resigned. His headquarters will be in the Woolworth Building, New York.

Richard C. Burton

In addition to directing Union Bag's container sales force in the field, Mr. Burton will supervise sales from Union's branch plants, which are under the direction of Roy Williams at Trenton, N. J., and M. Norian and M. Madson in Chicago.

R. J. Harley continues as district manager of the general container sales force.

C. W. T. Gets Green Light For New Mill

VANCOUVER, B. C. — Erection of a $25,000,000 pulp mill at Duncan Bay, Vancouver Island, will be begun immediately by the Canadian Western Timber Co. Ltd., according to an announcement by R. J. Filberg, president. The company has just received a forest management license from the British Columbia government.

In Vancouver, H. J. Macklin, who is associated with Mr. Filberg in the pulp mill venture, said that although the management license covered 57,000 to 75,000 acres, the company will make available to license its present regenerating lands and other lands, as logged, making the company's contribution to the license eventually 125,000 to 150,000 acres.

Until pulpwood from the license area reaches cutting size, 25 years from now, the company intends to secure wood for the mill by relogging, cutting marginal stands of smal timber unsuitable for saw logs, and using saw mill waste.

Raymond S. Hatch Retires

LONG VIEW, Wash.—Under a retirement plan instituted by the Weyerhaeuser Timber Co. some years ago, Raymond S. Hatch who, for the past 15 years has been Director of Research of the Pulp Division, will retire on July 1 and will be succeeded by Dr. Harold Bialkowsky.

Mr. Hatch is a charter member of TAPPI and served as president of TAPPI in 1919 and 1920. He is the author of many papers dealing with the physical and chemical testing of pulp and has been granted numerous patents in the field of wood chemistry and in pulping.

For the present Mr. Hatch will maintain his residence at 1158 - 24th Avenue and will be available for consultation work in the fields of pulping, bleaching and pulp purification, where his many years of experience will enable him to continue to contribute to the development of this branch of the pulp and paper industry.

Grand Container Plant In North Bergen Readying

NORTH BERGEN, N. J.—Grand Container Corp., is completing a plant fronting 1,000 feet on Tonnele avenue in the vicinity of Twentieth street, where approximately 500 persons will be employed. Major portion of the building is one story high. A front section to house the offices, will be two stories high. A front section to house the offices, will be two stories high. The building is approximately 280 feet deep and has a floor area of nearly 300,000 square feet. The new building is the second one erected by the firm in this city. Moving of machinery from Manhattan ad Brooklyn plants will start early in July, Michael Stein, president, discloses. The new plant entails an outlay of $1,500,000, it is stated.

Efficient, High Capacity Handling with LINK-BELT BELT CONVEYORS

A wide variety of materials—chips, logs, sulphur, lime, salt cake, wet pulp, hog fuel, etc.—can be handled economically by Link-Belt belt conveyors. High production with low operating and upkeep costs are typical of Link-Belt installations, reflecting the most advanced design and construction of idlers, drive machinery, feeders, discharge chutes, trippers and welded steel pulleys.

Through Link-Belt's vast experience in solving handling problems, these elements are coordinated for smooth, efficient operation, in correct relation to the type of belt and the nature of the materials to be handled.

The above view, in a West coast paper mill, shows a transfer point between two Link-Belt belt conveyors at right angles, carrying wood chips at the rate of 45,000 cu. ft. per hour.

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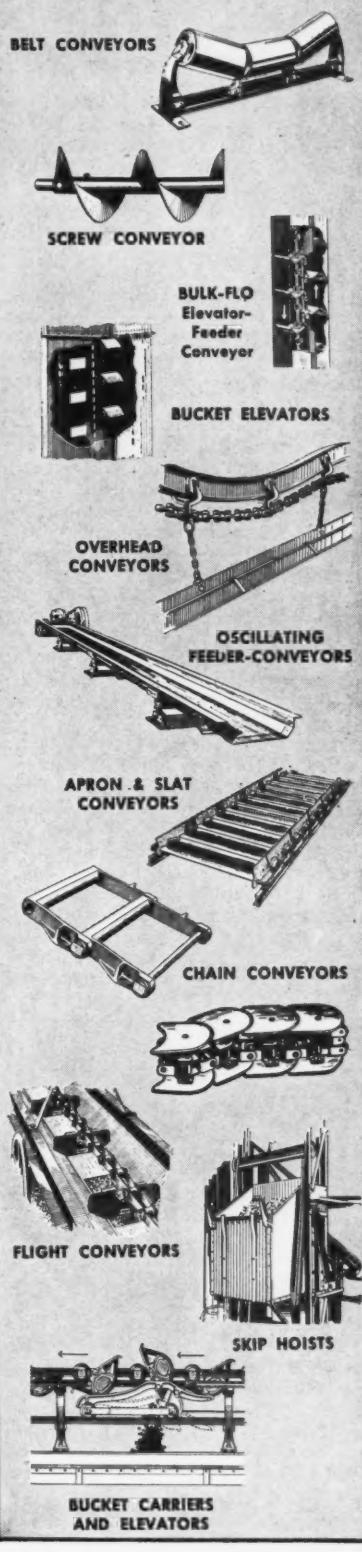


Institute of Paper Chemistry Graduates Honored

APPLETON, Wis.—Lawrence college awarded six Ph.D., and 15 M.S., degrees at its 99th commencement here June 13 to graduates of the Institute of Paper Chemistry. The Institute is affiliated with Lawrence.

John Selby Barton received the Westbrook Steele medal. His thesis title was "A Study of the Reaction Products of Lignin and Sodium Chlorite in Acid Solution." One of the six receiving a Ph.D., he was awarded his B.S. degree at the University of Washington in 1940, and his M.S. degree at Lawrence in 1942.

Dr. Otto Kress, Appleton, retired technical director of the Institute, was one of four educators who were awarded honorary doctors' degrees. Westbrook Steele, executive director of the Institute of Paper Chemistry, made the presentation.

The citation by President Nathan Pusey of Lawrence read: "Otto Kress, we live in a part of the world where pioneers and pioneer virtues are held in high esteem. Pioneer member of a pioneer enterprise, the Institute of Paper Chemistry, before that, one of the pioneer doctors of philosophy to specialize in the problems of the pulp and paper industry, you have recently, and from our point of view, regrettably, pioneered again in becoming the fire eremiti of the Institute you have so ably and loyally served.

"Inventor, teacher, equally at home in theoretical and applied aspects of chemical knowledge—in laboratory, classrooms and the mill—you have been a great credit both to the Institute and to the pulp and paper industry; admired as a scientist, beloved as a friend, it is a pleasure today to have you with us, to tell you of our high regard for you, and by virtue of the authority vested in me, to confer upon you the degree of doctor of science and to admit you to all the rights, privileges and obligations which pertain thereto."

Others receiving Ph.Ds., their theses titles and their previously awarded degrees:

George Edward Martin, "The Hydrolysis of Sodium Sulfide in Mixtures with Sodium Hydroxide"; B. S. in chemical engineering at Rice Institute in 1941 and M. S. at Lawrence in 1943.

John Mitchell McEwen, "The Role of Water in the Starch-Clay Paper Coating System"; B. Ch. E., Ohio State University, 1939, and M.S., Lawrence, 1941.

William Hakes McPherson, Jr., "The Mechanism of the Softening of Paper gy Glycerin"; B.S., Syracuse University, 1942, and M.S., Lawrence, 1944.

Francis Tenney Ratliff, "The Possible Correlation Between Hemicelluloses and the Physical Properties of Bleached Kraft Pulps"; B.S., Louisiana State University, 1940, and M.S., Lawrence, 1942.

Curtis Sanborn Walseth, "Enzymatic Hydrolysis of Cellulose"; B. S. in Ch. E., Iowa State College, 1941, and M.S., Lawrence, 1943.

M.S. degrees: Richard Willits Brown, B.S., Haverford College; Richard Max Elias, B. A. Lawrence, 1943; Henry Day Fisher, B.A., Oberlin, 1943; Kenneth Mark Grasse, B.S. in Ch. E., Illinois Institute of Technology, 1942; John Leslie Ham, B.S., Iowa Wesleyan, 1944; Cecil Lawrence Hess, B.S., Montana State, 1944; James Joseph Higgins, B. Ch. E., Ohio State, 1942; Darrell Macy Martin, B. Ch. E., Marquette, 1944; William Carl Martin, B. Ch. E., Ohio State, 1943; Wesley Lloyd Pearl, B.S., Ch. E., University of Washington, 1942; Ellsworth Harold Shriver, II, B. Ch. E., Ohio State, 1942; Walter Eugene Spearin, B.S., University of Maine, 1943; Paul Eugene Trout, B.S., Montana State, 1943; Herman Ward Verseput, B. Eng., Yale, 1942, and John Edward Ward, B. A., Wabash College, 1943.

The Westbrook Steele award is made to "that man of the fourth year class whose thesis has demonstrated to the greatest degree an understanding of the relation of the subject to the broader problems of pulp and papermaking, originality and soundness of approach, ingenuity of technique and thoroughness of craftsmanship in carrying on the work in preparation and presentation of the dissertation."

Union Bag Awards Forestry Fellowships

DURHAM, N. C.—Two Union Bag & Paper Corp. fellowships for next year have been awarded to W. N. Haynes and Richard C. Smith, Dean C. F. Korstian of the Duke University School of Forestry reports. Each carries a stipend of $800, and a fund for expenses in connection with the recipient's thesis projects.

Mr. Haynes is a forestry graduate of the University of Georgia whose home is Chattanooga, Tenn. His experience in forestry has been with the TVA on logging cost studies and as woods foreman for the Cumberland Case Co. in eastern Tennessee. He will be employed during the summer by the Woodlands division of Union Bag on research and special assignment.

Mr. Smith, whose home is St. Paul, Minn., is a forestry graduate of the University of Minnesota and also of the Duke School of Forestry where he received the M.F. degree in 1947. His forestry experience includes various assignments with the U. S. Forestry Service and as forester with the American Creosoting Co.

Exporter Sees Trade Shrinking

NEW YORK—A steadily shrinking market confronts American exporters of paper and they can hope for little direct or indirect benefit from the European Recovery Program, Harry Bengtsson, president of H. Benex Corp., who heads the United States Paper Exporters Council Inc., stated on June 5.

The market built up during the war has dwindled steadily during the last eight months, Mr. Bengtsson said. Inability of most markets to finance imports and refusal of a number of countries to license imports from the dollar area are the main reasons for the contracting market, he added.

Probable consequence of this condition, Mr. Bengtsson continued, will be a dropping out of the export trade by many of the warborn concerns. Well-established firms will continue to hold their present markets, some on the reputation for quality American paper has won in some areas. Such companies will benefit by the exit of newer companies, he commented. Many of the latter are expected to turn to other outlets.

A more certain result of ERP efforts, Mr. Bengtsson stated, will be a strengthening of Europe's paper production facilities. Although Europe has never been a large outlet for American paper, production there eventually will increase the competition for world markets dominated by this country during the war, he noted.

Normally, the amount of American paper exports, other than newsprint, seldom has exceeded two per cent of total domestic production. While total production this year, excluding newsprint, is expected to reach a high of 22,000,000 tons, the export trade's share is likely to be less than the 440,000 tons for which it normally would account, Mr. Bengtsson said.

Among countries maintaining import barriers on paper requiring dollars are India, Australia and Argentina, he said. China, India, South Africa, the Middle East and South America have been the chief markets for American paper. Under ERP policy, Mr. Bengtsson added, it has been decided not to send any paper or pulp to Europe, but to concentrate such aid on restoring production there.

"There is little that the individual paper exporter can do, except hope for improvement in the internal economies of other nations and the general currency exchange situation" he concluded.

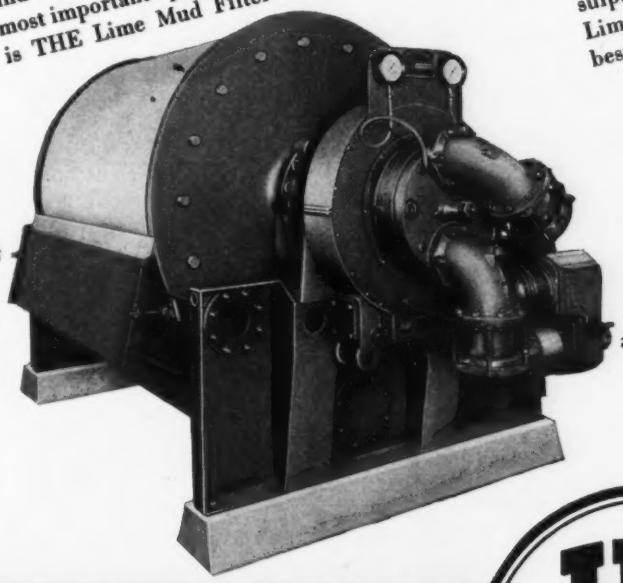
OLIVER Lime Mud FILTER

THE filter for a "chemical" filtering JOB

One section of the sulphate mill is so distinctly "chemical" in its scope and problems that consideration of the equipment required should be "chemical", not just "paper". We refer to the causticizing section with the recovery and washing of lime mud as one of its most important operations. The Oliver is THE Lime Mud Filter which has been developed from THE continuous vacuum filter most widely used in chemical plants.

You will want the Oliver . . . the choice of most sulphate mills of the country!

This filter is designed to wash and dewater lime muds efficiently and is constructed to withstand for a long time the attack of chemicals. By its record in sulphate mills, the Oliver Lime Mud Filter is the best to buy.



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Showers Subdue Flames

TORONTO, Ont.—Light rains over large areas in Northern Ontario have at least partly subdued the forest fires, but the danger is by no means over, according to interested parties coming from the district. In Ontario, alone fires of greater or lesser extent covered a wide arch from the Manitoba border to the Quebec border, sweeping north of the upper Great Lakes. The largest single blaze in the whole district was that which swept north from Blind River to Chapleau, which is roughly up the Mississagi valley and beyond, covering thousands of acres of wooded land in the southern part of Algoma and Sudbury counties. Originally two great fires raged in this district and even now it is difficult to say exactly when the two merged to make a single huge conflagration covering an estimated 475,000 acres.

Huron Forest Products Ltd., with limits in both the Mississagi and Chapleau districts, was probably the hardest hit of the many lumbering and pulp and paper companies in Northern Ontario. The company had 300 to 400 men working night and day fighting the fires. Due to the dense smoke covering the entire area, it is difficult to assess the extent of the damage, a company official stated. The total effect of the fires on this company's original plan to erect a pulp and paper mill in the area will not be known for some time.

Brompton Pulp & Paper Co., limits in the Helen Lake area, Marathon Paper Mills limits north of Marathon, and Abitibi Power & Paper's limits in township 26, range 16, were also more or less affected. Damage to Abitibi's limits is reported to be comparatively light to date. Many lumbering operations were in the path of the fires.

In Northern Quebec the recent rains were apparently heavier than those in Northern Ontario and are said to have effectively checked all fires. In this area the hardest hit company was Canadian International paper, with 24 square miles of timber limits there, mostly south of Clova, burned over and two camps destroyed. Consolidated Paper suffered some damage on their limits around Trenche River in the St. Maurice area, while minor damage was done to the northwest tip of Eddy Paper Co., limits and a small fire threatened the limits of the James Maclaren Co., for a time.

Forest fires in Canada began a little earlier than usual this year and although most fires have been placed under control, there is still a long season ahead during which great care will be required throughout the standing timber areas. The country was a little short on rain in May and early June, while the driest period is usually August and late July and early September.

Losses occasioned by these forest fires are not confined to the timber burned. In past weeks thousands of woods workers have been spending their time fighting fires instead of cutting timber and pulpwood. The operating companies have their wages to pay while production is interrupted. In addition, hundreds of government employes, county, township and municipal officials and employes, as well as many others, are recruited to help fight the fires.The burned-over timber is not all loss, because some of it can be salvaged. The fire sweeps over the tree branches with such fury that the trunks of most of the larger trees remain standing, stripped of their foliage and bark, stark reminders of their former beauty. Providing such timber is taken out before disease and rot have a chance to further destroy the wood, it is still a valuable resource.

It is the intention of the provincial government to have the burned over timber in the Mississagi and Chapleau areas taken out as soon as possible after the fires have been completely extinguished. Companies in the area will handle their own limits, it is understood, while some will sub-contract where the job is beyond their facilities.

Fire protection services for 860,000 square miles of Canadian forests cost taxpayers $6,405,394 in 1946, including $905,599 for actual fire-fighting. In Ontario, expenditures for the 1945-46 fiscal year were $1,059,080, including $74,469 for extra fire fighters. The number of men employed by the government at the peak period was 890. In Quebec, in the same year, fire fighting cost the province $118,403, and license holders and individuals, $45,361.

Fire damage and the inroads made by insects and disease account for about a quarter of our annual forest depletion. Approximately 3¼ billion cubic feet of merchantable timber have been taken from Canadian reserves annually in recent years.

According to the Dominion Bureau of Statistics, the average annual area burned over during the last ten years amounted to 2,429,390 acres, with a value of $4,319,043. There was an average of 5,513 fires each year. There were many causes given for these fires. The Bureau has them tabulated as follows:

Causes of Fires	Annual Average 1936-45	Percentage
Camp fires	961	17
Smokers	961	17
Settlers	763	14
Railways	368	7
Lightning	1,025	19
Industrial operations	155	3
Incendiary	302	5
Public works	48	1
Miscellaneous unknown	467	9
Unknown	463	8
	5,513	100

Timber Fire Losses Insurable?

Limitholders Mutual Insurance Co., Thinks So

TORONTO, Ont.—With forest fires still devastating hundreds of acres of potential lumber and pulpwood throughout Ontario, Quebec and Manitoba, many, both inside and outside the forest industries, are beginning to wonder if there is some way of lessening this great destruction or, at least, taking out monetary insurance against capital losses.

Greatest losses accrue to the public weal because many of the operating companies simply secure cutting rights from the provincial government and pay stumpage duties on timber or wood cut. They also share in the fire prevention expenses in the area, but providing there is no loss to buildings, equipment or timber or wood already cut, the operators are not out of pocket.

Regular-line fire insurance companies have not been keen on this type of risk, but in the past year, under the leadership of W. G. Wright, forest engineer of Quebec City, a group of individuals decided that fire insurance for standing timber is feasible and a company to carry this type of insurance has been formed, to be known as the Limitholders Mutual Insurance Co.

Statistics gathered by this group indicates that despite bad fires in some areas, as in Ontario at present, the percentage losses of merchantable timber to the total accessible forest by fire in Quebec and New Brunswick has been about on the same level as that in the ordinary fire insurance business or lower. The main difference is that these forest fire losses tend to occur in large volume in certain years and to be relatively high in individual fires. Accordingly it is claimed that insofar as the long-term average losses from fire are concerned, these do not constitute a reason against forest fire insurance. The problem of reserves for abnormal losses, however, assumes more importance than in the ordinary fire insurance business, it is claimed.

When the regular-line fire insurance companies have been interested in insuring standing timber the rates have been so high as to be unattractive to limitholders. The group interested in the new company, however, claims that insurance of merchantable timber on a mutual basis can be provided on attractive enough terms to make it practicable. The company has a Dominion charter and under this charter shares can be held only by policyholders, except in the case of individual directors

(Continued on page 28)

Sutherland FIRST

About twelve years ago, the "then" astounding news leaked out that kraft paper was being made from stock prepared alone by Sutherland Continuous Beaters and Refiners. It had never been done before; some people didn't believe it, but it's been true ever since.

The original 14 Sutherlands in this mill are still in use, one more having been recently added. This mill produces well over 500 tons daily, their output ranging from 30 to 70 lb. bag, through 25 to 80 lb. wrapping, to 42 to 105 lb. liner board, and other specialty grades.

This is only one of many "Sutherland Firsts," and it produced a power saving of approximately 50% which, over a period of twelve years, has brought them a "substantial" return on their original investment, plus other advantages.

May we send you our new catalog, or may one of our engineers call?

SUTHERLAND REFINER CORPORATION

TRENTON, NEW JERSEY • *Manufactured in the United States by Valley Iron Works Co., Appleton, Wis*

SUTHERLAND REFINER LIMITED, 319 DRUMMOND BLDG., MONTREAL, P. Q. Manufactured in Canada by The John Bertram & Sons Co., Ltd., Dundas, Ontario

SUTHERLAND

Timber Fire Losses Insurable?

(Continued from page 26)

elected. The new company blazing a new trail in the insurance field will depend to a large extent on having a large volume of business on its books. As a new departure in insurance it will be watched not only as an agent of indemnity, but as a fire prevention agent as well, and will be of particular interest to all those interested in the conservation of national resources.

In the ten years 1936-45, the average annual forest fire loss was $4,300,000, very little of which it is believed was insured. Insurance of young growth is a separate problem. Values for insurance purposes are very low because the young growth may not be harvested for 50 years.

Regular-line fire insurance companies have considered the risk on large limits as too great and there is difficulty in arriving at the insurable value and setting a suitable premium. One large stretch of land may be covered with high-grade timber suitable for converting into sawn lumber, or it may be covered with good pulpwood, or again be so broken up by lakes and barren rocks that the wood value is negligible. One of the arguments against taking risks on standing timber has been that there is no way of appraising the possibility of loss. This could be done on close-in areas, but not on the larger limits.

Lumber and pulp and paper companies has been more interested in the loss of operations entailed by a fire than in the dollar loss of the standing timber. A company may have gone to considerable expense to erect buildings and install equipment for processing wood from a certain area. A forest fire may wipe out the source of raw material and thus render the plant useless. Thus, while it may be possible to insure the mill buildings and stockpiles in the yards against fires, it is more difficult to insure the raw product essential to its profitable operation and without which the mill is useless. Insurance companies have felt that a forest fire once started is liable to develop into conflagration proportions, making the risk undesirable.

In the meantime the forest fires in Canada continue to take an enormous slice out of the country's natural resources while politicians do little about fire prevention except make election promises. In the recent provincial election in Ontario, speakers for the three main political parties made strong promises regarding forest fire protection, none of them topped by the promises made by Premier George Drew, whose Progressive Conservative party has been in office since 1943 and who again secured the election of a suffiicient number of representatives to continue in power for another four years.

Without getting too deeply into the touchy party politics question, it may be stated that much had been expected of Premier Drew in regard to Ontario's forest resources. Prior to becoming premier, and while leader of the official opposition party, he had repeatedly criticised not only the then government, but former governments, for what he termed their neglect of this important source of wealth. After being elected and chosen premier he appointed Major Kennedy as a commissioner to enquire into all phases of the forestry question. In due course Major Kennedy reported and made a number of important and promising recommendations. A few important changes were eventually made in timber cutting contracts and perhaps some good things done that do not appear to the casual observer, but there is still widespread criticism of the lack of adequate forest fire prevention.

Present fire fighters are handicapped by the need for more bush roads, more fire towers and more fire fighting equipment at strategical and readily accessible points.

Blake, Moffitt & Towne Open Long Beach Division

LONG BEACH, Calif. — Millard J. Hines has been named manager of Blake, Moffitt & Towne's new Long Beach division. In announcing the appointment, O. W. Mielke, general manager of the firm, said: "Millard Hines is thoroughly familiar with the territory to be served, having been Blake, Moffitt & Towne's resident salesman in Long Beach for the past several years. We are particularly pleased with the convenience of our new location. The office-warehouse of 28,000 sq. ft. and spur track provides facilities for storage and delivery of merchandise that are ideal."

Other California expansion plans of Blake, Moffitt & Towne include a new division at Santa Barbara and a new building in Oakland. The Oakland structure, rapidly nearing completion, is expected to open the latter part of 1948.

Chicago's Swigart Building Large Warehouse

CHICAGO—Swigart Paper Co. has broken ground for a $500,000 warehousing plant at Inglehart court and Twenty-seventh street on the I.C. tracks. The one-story building will contain 65,000 square feet of unbroken floor space and a ceiling height of 20 feet. Loading accommodations for eight railroad cars and five trucks simultaneously are a feature. The Swigart company celebrated its 50th anniversary July 1. John D. Swigart is president.

Franc-Graham Moving To Larger Quarters

NEW YORK—Shortly after July 1 the Franc-Graham Paper Co., Inc., of 25 West 15th street, will move to new quarters at 104 West 17th street, where a large store and basement have been leased for a term of years.

Franc-Graham Paper Co., Inc., has been in its present location ever since the company was founded in 1922, enlarging their warehouse, from time to time.

A new Lawson cutter is being installed and the stock will be moved selectively so that there will be no halting of operations or slowing-down of shipments during the period of moving, Jerome Franc, president of the company, states.

St. Louis Pike and Wright Cut Waistlines

ST. LOUIS — Donald O. Pyke, sales promotion manager of the Graham Paper Co., and Gardner Wright, president of the Acma Paper Co., won first and second prizes, respectively, in a "grand weight reduction contest" staged by seven members of the St. Louis Advertising Club between January 1 and June. Mr. Pyke cut his weight from 232 to 188 pounds, 18.9 percent; Mr. Wright, from 229 to 192 pounds, 10.3 percent.

Ahdawagam Shuffles Hours To Cut Traffic Jams

WISCONSIN RAPIDS, Wis.—Ahdawagam Paper Products Co. has changed its work schedule from 7:30 to 11:30 in the morning and from 12:30 to 4:30 in the afternoon. The schedule will stay in effect until some time next fall, according to Frank Walsh, manager. He said the change was made to give employes an extra half-hour of time in the afternoon, as well as to alleviate the traffic jams at noon and at 5:00 o'clock in the afternoon.

Boston's Century Paper Co. In New Location

BOSTON, Mass. — Century Paper Co. is now in new and larger quarters at 295 Congress Street, to which the firm moved a few days ago from 275 Congress Street. Officers are: J. F. Halloran, president-treasurer; L. R. Mathers, vice-president; and H. J. Bourque, secretary.

Butterworth's Col. Smalley Visiting Boston Office

BOSTON, Mass. — Colonel Edgar Smalley, managing director of Edwin Butterworth & Co., Ltd., Manchester, England, is in this country, visiting the office of E. Butterworth & Co., Inc. Colonel Smalley is accompanied by his wife.

Butler Opens In New Orleans —John L. Thomas In Charge

NEW ORLEANS — The Butler Paper Co. of Chicago has opened a branch at 210 South Peter Street, with John L. Thomas as vice-president and manager heading local operations.

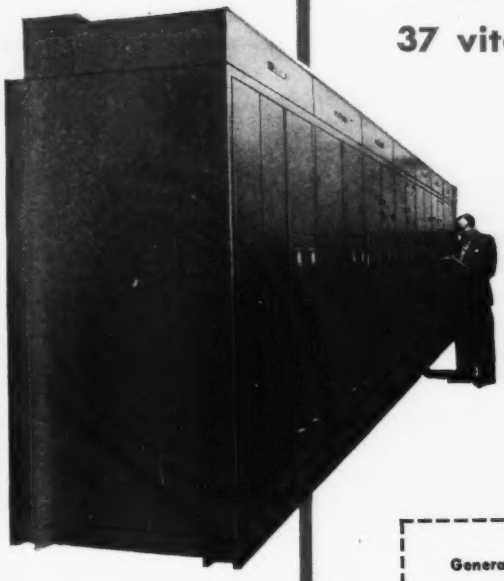
Carpenter Paper Co., Building In Albuquerque

ALBUQUERQUE, N. M.—Carpenter Paper Co., has been granted a permit to erect a $76,000 building here. Clough & King are the contractors.

protected...

BY GE LIMITAMP

37 vital operations in this rubber plant



Protection of this plasticator is just one of the vital jobs done by Limitamp starters at the Fisk Tire Plant of the U.S. Rubber Company at Chicopee Falls, Massachusetts. Over a period of four years, more than thirty-seven of these units have been installed in the Fisk Plant to operate generators, mills, Banburys, plasticators—and Fisk plans to add more.

"From a maintenance point of view, I wish we had Limitamp control on all our high-voltage motors." That's what P. L. Butterfield, Chief Electrician at the Fisk Plant says about these controllers.

Decreased maintenance costs are always an important consideration. Users of this equipment have found other advantages: high-interrupting capacity, increased safety, extra-long life, complete motor protection.

You'll need more information about these starters. Fill in the coupon and mail it to us. *Apparatus Department, General Electric Company, Schenectady, N. Y.*

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Gentlemen:

Please send me your publication GEA-4247 on the G-E Limitamp controller.

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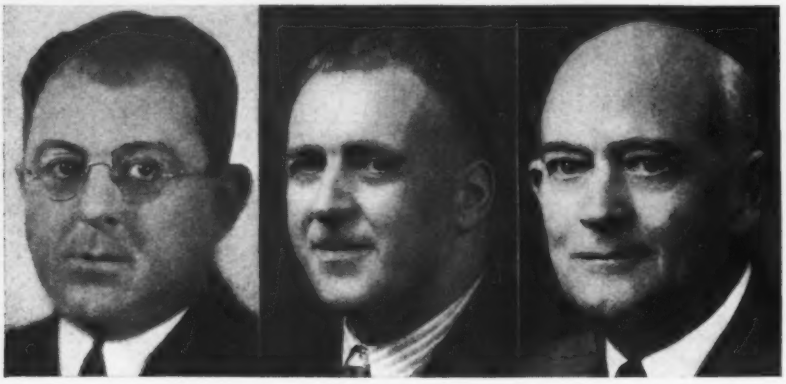
GENERAL ELECTRIC

Cameron Machine Co. Advances Three Key Men



Left to right: J. Scheuermann, vice-president of Cameron Machine Co., and of Cameron Machine Co., of Canada, Ltd.; Ross Mekeel, secretary, and Tom Carter, manager of the engineering department of the Cameron Machine Co.

BROOKLYN, N. Y.—At the last quarterly meeting of the board of directors of the Cameron Machine Co. J. Scheuermann was elected vice president of that firm and vice-president of the Cameron Machine Co. of Canada, Ltd. Mr. Scheuermann is also sales manager of the U. S. company.

At the same meeting, Ross Mekeel was elected secretary. Mr. Mekeel served for many years as purchasing agent and will continue in that capacity in the future, as well.

Tom Carter, formerly of the new design department, is now manager of the engineering department, succeeding former Chief Engineer Donnelly.

R. W. Cummings, former secretary, has resigned and after a three months vacation, will return to act as sales representative in the South.

E. J. Ward will take over Mr. Cummings' previous duties as service manager.

Weismuller and Daley Advanced By Du Pont

WILMINGTON, Del. — Frederick H. Weismuller has been named general manager of the pigments department of the Du Pont Co., effective July 1, succeeding John F. Daley, who will become general manager of the organic chemicals department on that date.

Mr. Weismuller has been assistant general manager of the pigments department since June 1, 1946, and has been engaged in pigments production since 1926, when he joined the Krebs Pigment & Chemical Co. as a shift foreman at its Newark, N. J., plant. That company became associated with Du Pont in 1929. Continuing at the Newark plant after that change, he became lithopone supervisor in 1930 and advanced to become plant manager in 1932.

He moved to the Edge Moor, Del., plant as plant manager in 1934. The following year, he became assistant production manager of the pigments department in the Wilmington, Del., office. He was made production manager in 1940 and named director of sales for the department in 1944, in 1946 being named assistant general manager.

Born February 11, 1897, in Brooklyn, N. Y., Mr. Weismuller attended public schools in Newark, N. J., and was graduated from Cooper Institute in New York City with a B.S. degree. Prior to joining Krebs, he was in laboratory and production work with the Butterworth Judson Corp., Newark, N. J., from 1915 to 1925 and in sales for the Pure Oil Co., Newark, from 1925 to 1926.

Whitaker Now Stein, Hall Laboratory Director

NEW YORK—Lawrence W. Whitaker has joined Stein, Hall & Co., Inc., as director of laboratories. A graduate of M.I.T., Mr. Whitaker was formerly associated with the S. D. Warren Paper Co., Westbrook, Maine. He will direct and coordinate the work of the Stein, Hall laboratories in both practical and theoretical research projects relating to the paper, adhesive, textile and food industries.

Foxboro Instrument Courses Now in Thirteenth Year

FOXBORO, Mass. — The Foxboro Co., which has conducted training courses in the theory, application, operation and maintenance of industrial instruments since early in 1935, has announced its schedule for the remainder of 1948. There will be five two-week courses in July-August and October-November - December. Courses will also be arranged for companies wishing to send special classes to study particular instruments and applications and courses will likewise be arranged for specific industry groups. Similar facilities are offered by the Foxboro Co., Ltd., in Montreal.

More than 900 representatives from some 300 firms here and abroad have attended these courses.

Enrollment is by application, forms for which are available through branch offices or by writing to the Director of Training Courses, Foxboro Co., Foxboro, Mass.

Worthington Makes Hirsch Holyoke Executive Engineer

HOLYOKE, Mass. — S. R. Hirsch has been named an executive engineer of the Holyoke plant of the Worthington Pump & Machinery Corp. He will be in charge of engineering for all product divisions at the Holyoke factory.

Mr. Hirsch began his engineering career in refrigeration and air compressors, and has specialized in that field ever since. He started with Worthington in 1925 as a student engineer, and in 1937 left the position of assistant chief engineer of the refrigeration division at Harrison, N. J., to become chief engineer for the Bruner Mfg. Co., in Utica, N. Y. Last year he became vice-president of the American Coils Co., in Newark, N. J., where he remained until his return to Worthington. A graduate of Cornell, he holds an M.E. degree

John H. Matthews Elected Canadian Raybestos Director

PHILADELPHIA — John H. Matthews, vice-president and director of Raybestos-Manhattan, Inc., was elected to the board of directors of the Canadian Raybestos Co., Ltd., at the annual meeting held at Peterborough, Ontario, Canada. The Canadian company, making automotive friction material and rubber and asbestos products for the Canadian market, is an operating unit of Raybestos-Manhattan, Inc.

Mr. Matthews is in charge of the Manhattan Rubber Division at Passaic, N. J. He has been with Manhattan since 1914 after graduating from Stevens Institute of Technology.

McArthur To Seattle For Dorr Co.

Charles K. McArthur, an engineer of the Dorr Co., with 22 years experience in many phases of its engineering activities, has opened an office in the Lloyd Building, Seattle 1, Wash. He will be the company's permanent representative in Washington, Oregon and Idaho. Mr. McArthur until recently, was manager of the North American Division of the Dorr Co. with headquarters in New York. Prior to that, he was manager of branch offices in the western states and Canada.

HIGH WHITENESS

Gleaming sails and fine coated paper have this one quality in common.

To meet the increasing demand for *high whiteness* in coated sheets, many paper makers have turned to Wyandotte Precipitated Calcium Carbonate.

This superlative paper-coating pigment is known for its brightness and smoothness. It is unequaled in hiding power and ink absorption . . . in freedom from grit and abrasiveness . . . in the uniformity so essential to machine coating.

For many years, Wyandotte Chemicals Corporation has made a *business* of supplying the Paper Industry with the finest in Precipitated Calcium Carbonate. Why not take advantage of the long experience and extensive research that have gone into the making of this fine chemical? Write for complete information today.

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WYANDOTTE, MICHIGAN • OFFICES IN PRINCIPAL CITIES

Soda Ash • Caustic Soda • Bicarbonate of Soda • Calcium Carbonate • Calcium Chloride • Chlorine • Hydrogen • Dry Ice • Glycols
Ethylene Dichloride • Propylene Dichloride • Chloroethers • Aromatic Sulfonic Acid Derivatives • Other Organic and Inorganic Chemicals

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REG. U. S. PAT. OFF.

Port Edwards and Nekoosa Up Pay Ten Per Cent

PORT EDWARDS, Wis.—Hourly employes of the Nekoosa-Edwards Paper Co. mills at Port Edwards and Nekoosa have been granted a 10 per cent increase, effective June 6, John E. Alexander, president and general manager, stated on June 18 in announcing completion of negotiations between the unions and Nekoosa-Edwards.

Benefits included in the agreement provide for an increase in the shift differential from four to six cents per hour for the second shift and from six to eight cents for the third shift, according to Mr. Alexander and double time for Sunday work. Provisions were included to have extra time take effect immediately when an employe is obliged to work an extra shift because of the necessary absence of his partner on the next shift.

Although most employes are now on a 40-hour week, 44 hours pay for vacation time will be allowed for employes with one to five years of continuous service and 88 hours pay for vacation time will be allowed all employes with more than five years of continuous service. In addition, although a pension plan is currently in effect and has been for some time, further study will be given the problem.

The new contract will bring the base rate for male employes to $1.21 per hour, an increase of 55 cents per hour since V-J Day. Because many positions in the mills are classified considerably higher than the base rate, the average hourly increase is substantially more than the 55-cent-per-hour increase on the base rate.

Representing the unions in the negotiations were E. G. Gilbertson, International Brotherhood of Paper Makers, and Reno Plenge, president Nepco Local No. 59; Elmer Meinz, International Brotherhood of Pulp, Sulphite & Paper Mill Workers, and Frank Newman, president Nepco Local No. 52; Arvel W. Kinney, International Association of Machinists, and Arthur Morgan, president Nepco Local No. 1543.

Nekoosa-Edwards was represented by John E. Alexander, president and general manager, C. H. Reese, vice-president in charge of manufacturing; N. E. Nash, vice president; S. A. Casey, counsel; W. R. Cahill, director of industrial relations; C. C. Parvin, general superintendent; N. H. Christian, Port Edwards operating superintendent; and R. A. Nugent, Nekoosa operating superintendent.

The contract, effective from May 30, 1948 to April 30, 1949, provides a minimum increase of 12 cents an hour, and a maximum of 16 cents, plus three additional holidays with pay.

The employees, members of the International Brotherhood of Pulp, Sulphate & Papermill Works and the International Brotherhood of Papermakers (both A. F. of L. affiliates) will continue to work at a basic wage of $1.06 an hour. New rates for paper-makers and higher trade classifications will be well over $2.25 an hour.

The settlement marks 12 years of contract employment without strike, lockout or any interruption of work, at the five mills involved: pulp Division of Bloedel, Stewart & Welch; British Columbia Pulp & Paper Co.; Pacific Mills Ltd.; Powell River Co. Ltd.; and Sorg Pulp Co.

A joint statement issued by the company and the unions termed the settlement "an outstanding example of collective bargaining carried on in good faith and with mutual respect."

Negotiations were conducted by John Sherman, vice-president IBPSPMW and A. E. Brown, vice-president IBPM and H. L. Hansen, for the unions, Chairman for the employers was J. A. Young, Pacific Mills, Ltd.

New Wage Agreement For B. C. Mills

VANCOUVER, B. C.—A wage agreement granting an 11-per cent increase for 5,000 employes of pulp and paper mills of British Columbia was recently signed by union representatives and the management of the mills.

Halifax Paper Co. Workers Favor CIO

CHARLOTTE, N. C.—According to William Smith, North Carolina CIO director, workers of the Halifax Paper Co. in Roanoke Rapids have voted in favor of the United Paper Workers (CIO) as their representatives as exclusive bargaining agent.

Mr. Smith said results of the election, which was conducted under supervision of NLRB were: For United Paper Workers, CIO, 240; for International Paper Workers, A. F. of L., 123; for no union, 1.

The International Paper Workers petitioned the NLRB for an election this year after losing to the CIO union in an election in 1947. The CIO victory this time was twice that of last year, Mr. Smith said.

Australian Notes

During the month of February imports of newsprint into Australia dropped by 13,591 tons against the January figure. February imports totalled only 3,703 tons, whereas January imports were 17,294 tons.

Other printing papers landed during the month were (in hundredweights of 112 pounds): Imitation art, 7,349 (Sweden 2,473; U.S.A. 2,088; U.K. 1,992; Finland 707; Norway 89); duplex, 56 (all from U.K.); other coated printing papers, 15,992 (U.S.A. 9,059; U.K. 4,271; Czechoslovakia 936; Sweden 693; Norway 613; Canada 420); glazed imitation parchment, 5,091 (Sweden 3,808; Finland 979; U.K. 238; Norway 66); other lithographic and machine glazed or one side calendered, 3,519 (Sweden 1,049; U.K. 939; Finland 560; Czechoslovakia 523; U.S.A. 326; Norway 122); offset embossed, 1,504 (Canada 1,125; U.K. 189; Sweden 120; Norway 43; U.S.A. 27); other poster printings, machine glazed, 6,220 (Sweden 4,128; U.K. 601; Austria 448; Czechoslovakia 410; Finland 397; Norway 236); and other printing papers, 41,057 (Sweden 11,073; U.S.A. 8,921; Canada 7,441; Norway 5,177; U.K. 3,879; Finland 2,843; Netherlands 1,015; Czechoslovakia 708).

Total imports of printing papers from the United States during the month were valued at £96,895 ($465,096 at par).

Timber history in Queensland was made in April last when an advertised sale of 37,500,000 superficial feet of pine logs (23,500,000 ft. of Hoop pine and 14,000,000 ft. of Pinus Taeda and Carribea) was withdrawn because of a belief that this timber would suit the purposes of a paper mill about to be erected in Brisbane. Actually the logs were the thinnings of plantations, of a girth not exceeding 18 inches.

A syndicate of New Zealand businessmen at Hokitika is waiting the decision of a tribunal set up under the Industrial Efficiency Act, on its application to establish a $4,800,000 paper mill to utilize bush waste from West Coast sawmills. In the event of a license being granted, it is possible that English investors will support the flotation of a company. Proposal is to erect a plant capable of producing from the bush waste some 7,000 tons of newsprint and 3,000 tons of sulphite wrapping annually. Initial approach to the matter was made back in 1940, but had to be shelved owing to the war. Estimated supply of waste available is expected to last for at least 30 years. Samples of newsprint and wrappings made from West Coast timber show, it is stated, that the type of paper it is planned to produce would be equal to that at present in use throughout the Dominion. (Timber samples were sent to overseas mills for paper samples to be made.)

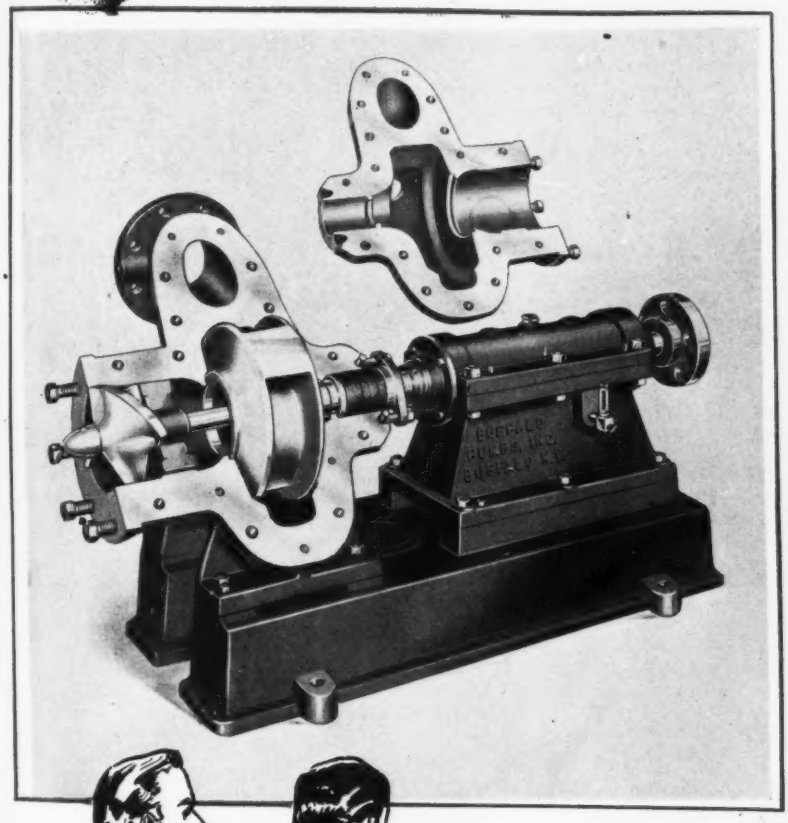
Owing to recent flood damage caused

(Continued on page 34)

CENTRIFUGAL PUMPS FOR EVERY SERVICE

"This pump has paid for itself over and over in PERFORMANCE"

PUMPS by "Buffalo"



—say users of "BUFFALO" Diagonally Split-Shell PAPER STOCK PUMPS

● Cut your pumping costs where economy COUNTS—in *more years of pumping service with fewer stops for maintenance.* "Buffalo" Diagonally Split-Shell Double Suction Pumps, like the above, are non-clogging, high in efficiency and built with extra heavy, extra durable parts. "Buffalo" *also builds pumps* for every paper mill need, in wide range of capacities. *Write us for Bulletin 953-F, left, at no obligation.*

For

- WATER ANY TEMPERATURE
- PAPER STOCKS (NON-CLOGGING)
- GENERAL SERVICE
- ACIDS
- ALKALIS
- SLURRY
- CONDENSATE RETURN
- SUMP CLEARANCE
- FIRE SERVICE
- SEWAGE
- SELF-PRIMING SERVICE

BUFFALO PUMPS, INC.

159 MORTIMER STREET BUFFALO, N. Y.

Canada Pumps Ltd., Kitchener, Ont.

RUGGED, PRECISION CONSTRUCTION—FOR LONG LIFE

Australian Notes

(Continued from page 32)

to the Tarraleah canal and consequent hydro-electric power rationing, the production of ground wood pulp ceased for a while at the Boyer (Tasmania) works of Australian Newsprint Mills Pty. Ltd., and eventually the paper-making machine was brought to a standstill, causing a loss in production of about 100 tons of newsprint.

Registered recently: Max Freilich Pty. Ltd., capital $48,000; manufacturers of paper and paper products. Subscribers, Max M. Freilich and Robert Mitchell. Offices, Sydney.

A display of transparent wrappings, designed to show their many and varied uses, was made recently by Wrightcel Products Pty. Ltd. at the Chalet, Wattle Park, Melbourne. Display was arranged by the firm to highlight a conference of its interstate representatives, and was inspected by many businessmen representing a wide range of industries.

The Commonwealth Statistician reports that whereas the average salaries and wages per annum in the paper industry in 1938-39 were 238 pounds ($1,142.40 at par), by 1945-46 these had increased to 335 pounds ($1,608). Value of output per person had increased from $5,630 to $7,570; and the ratio percent of salaries and wages to the value of production had increased from 46.41 to 52.28.

Imports of pulp and paper in the years 1938-39 and 1945-46 were as follows: Pulp, 37,704 tons and 37,752 tons; newsprint, 177,114 tons and 101,842 tons; other printing papers, 28,187 tons and 5,845 tons; boards, 11,230 tons and 32,208 tons; wrappings, 7,629 tons and 3,459 tons; writing and typewriting papers, 15,095 tons and 9,075 tons; all other paper (only partly estimated) 10,805 tons and 6,895 tons.

Mr. S. L. Kessell, managing director, and Mr. R. W. Henry, deputy general superintendent of Australian Newsprint Mills Ltd., Tasmania, are now making an overseas business trip, visiting the United States and Canada to investigate the latest ideas in forestry management, control and equipment, also the newest paper-making processes and devices. Mr. Kessell will later visit England on a similar mission. Final arrangements are to be made regarding the specifications and ordering of the machinery to be bought for the company's $15,000,000 expansion program.

Mr. C. D. Colling, director and sales manager of Pacific Paper Sales Pty. Ltd., is at present visiting the United States on business.

Elof Hansson In U. S.

NEW YORK — Elof Hansson, large stockholder in Elof Hansson, Inc., New York, and senior partner in the firm of Elof Hansson, Gothenburg, Sweden, arrived June 14 aboard the *Gripsholm*, accompanied by his wife and three youngest children.

Constructive Solution of Canada's Export Expansion Needed

VANCOUVER, B. C. — Total possible present curtailment of imports is "insufficient to achieve the full adjustment of our trade with United States." This was the view of Benton Cancell, vice-president of the Powell River Co., in a "world trade week" address to Rotary at Hotel Vancouver.

"We are forced to seek the more constructive solution of expansion of exports, and it is in this field that the pulp and paper industry, and the British Columbia part of that industry have the greatest contribution to make," Mr. Cancell said.

In 1947, he pointed out, 44 cents of every United States dollar Canada gained from exports to that country came from the pulp and paper industry.

"The industry is financially sound and full of vigor and enterprise," the speaker assured his audience. "It will play its part in the necessary trade adjustments that seem to be inescapable in the years ahead."

He expressed confidence that the industry would reach new heights of productive ability.

"We can expect expansion of exports of both newsprint and pulp to continue in 1948," Mr. Cancell predicted.

Between 1939 and 1947, he said, exports of newsprint to U.S.A. increased from 2,200,000 tons, value $100 million, to 3,700,000 tons, value $300 million. Pulp exports, he continued, rose from 640,000 tons, value $27 million, to one and one-half million tons, value $165 million.

"In 1947, Canadian exports (of all kinds) totaled $1,034,226,000, and of this, pulp and paper accounted for $447 million," he reported.

Mr. Cancell emphasized a conviction that restoration of health to the world economy hinged largely on restoration of German industry. He also saw Britain faced with a lowered living standard for a "long time."

Member of the United States forest industries sub-committee of the commission on disarmament of Germany, he and another had voted against reduction of that country to a "peasant economy."

"The most drastic course was taken by the U. S. government in their zone, but I believe that today the situation is being reversed," he observed. "This is because it is now realized that an industrially healthy Germany is vital to the economic well-being of Europe and as a bulwark against Communism."

Reviewing Britain's decline of buying-power in the world, he noted that in 1911 the United Kingdom had from overseas investment an income of £200 million and imported £20 million worth more goods than she exported, leaving a balance of £180 million for reinvestment.

"But in 1922," he said, "imports were £150 million in excess of exports, leaving only £50 million to invest, and after the recent war the overseas investments were almost entirely gone."

"We must be prepared," Mr. Cancell declared, "to accept a level of taxation that will permit the Canadian government to buy substantial quantities of much-needed food and other products and turn them over to Britain."

Rafferty, Philly Golf Star

PHILADELPHIA—Joseph (Chap) Rafferty of the Sidco Paper Co., proved to be the best golfer of the day in a record field of 64 at the annual outing of the Philadelphia Paper & Cordage Ass'n., at the Manufacturers Golf & Country Club, Oreland, Pa., June 15.

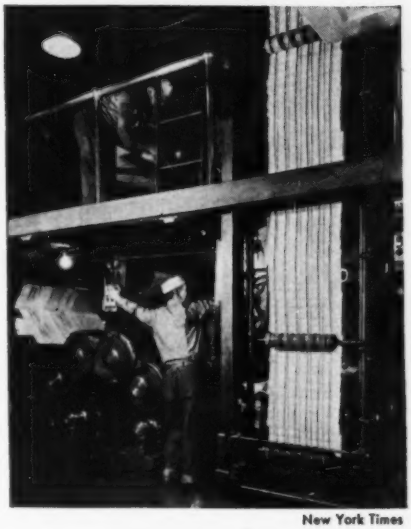
Rafferty's 40-38-78 won the coveted Schuylkill Paper Co. trophy for low gross, competed for annually at these affairs. George W. Hoffner of S. Walter, Inc., a former winner, was runner up with a 79 gross.

William J. Culverhouse of the Irvey, Shelly, Jr., Co., Long Island City, N. Y., won the toss for best low net, having tied with Preston Patterson, a guest. Morrison Moose of the Drexel Paper Co., was the day's quoit champion. Mr. Moose encountered close competition all the way in a large field and justly earned his right as the winner of the George K. Hooper memorial trophy, put into competition for the first time this year. The Hooper trophy is a contribution by the past presidents of the association to honor the memory of George K. Hooper, one of the founders of the organization, president for several terms and an indefatigable worker for the welfare of PP&CA. Mr. Hooper died in 1945.

A turkey dinner was served in the club house in the evening, followed by the awarding of prizes to successful competitors on the golf course. A floor show concluded the best-attended outing in the history of the organization.

Edwin V. Rementer of the Hooper Paper & Twine Co., was general chairman of the affair.

Interesting facts about PAPER



New York Times

Each daily edition of *The New York Times* (circulation approximately half a million) requires about 125 tons of newsprint and 4,000 pounds of ink. Sunday editions call for more than twice that much.

Interesting Facts about Direct Chinoline Yellow

DIRECT CHINOLINE is the brightest and greenest direct yellow. Possessing excellent solubility, level dyeing and good light fastness, it is recommended for use in coloring bond, book and cover papers to produce bright yellows or greens in combination with QUINIZOL BLUE BP CONC. DUSTLESS.

Calco

CALCO CHEMICAL DIVISION
Heller & Merz Department

AMERICAN CYANAMID COMPANY
Bound Brook, New Jersey

New York • Chicago • Boston • Philadelphia • Charlotte • Providence

U. S. Imports of Wood Pulp March and April 1948 In Short Tons

	March	April
Wood pulp, total	208,180	171,010
Bleached sulphite, rayon and special chemical grades	24,907	17,636
Bleached sulphite, other	33,309	25,866
Unbleached sulphite	57,794	50,537
Bleached sulphate	26,250	18,420
Unbleached sulphate	38,667	26,148
Soda pulp	2,414	1,674
Chemical screenings	976	873
Bleached mechanical groundwood	.....	.....
Unbleached mechanical groundwood	23,385	29,532
Mechanical groundwood screenings	478	324

U. S. Exports of Waste Fibrous Materials March and April 1948

	March	April
Waste Fibrous materials, total	15,305	12,352
Overissue news	1,274	1,820
Other waste paper, including old newspapers	11,773	9,411
Rags for paper stock; valued at $50 or over per ton	194	579
Rags for paper stock; valued under $50 per ton	1,412	490
Other paper stock	652	52

TRENDS

Office of the PAPER TRADE JOURNAL
Wednesday, June 23, 1948

A surprising development in the proposed purchase of Canadian newsprint for Britain with ECA dollars came in letter form from Bowater Paper Co., Inc., to its U. S. customers on June 11 informing them that on March of this year a U. S. publisher had suggested to Bowater's in London the following plan:

"1. The U. S. publisher to supply pulpwood and sulphite free of cost to Bowater's in England.

"2. Bowater's would then process this pulpwood and sulphite into newsprint and ship it back to the U.S.A. for the American publisher in question.

"3. The American publisher would pay in U. S. dollars for the cost of converting the raw materials into newsprint and for the cost of handling and shipping the newsprint back to the U. S.

"The Bowater Company explained to the U. S. publisher that while the idea was sound—in that it enabled Britain to start up idle newsprint machines and because it would produce U. S. dollars which Britain so vitally needs—such a deal could not be consummated unless the British Government gave its approval, since the British Government imports all raw materials for the manufacture of newsprint and stipulates the rate at which newsprint manufacturers may operate.

"Bowater's submitted the proposal to the British Government and it was finally approved a few days ago.

"If any of our customers would be interested in trying to work out a similar arrangement with Bowater's in England, we would be very happy to give you such information as we have available. You understand, of course, any offer to Bowater's would have to be approved by the British Government before Bowater's could accept an offer."

The British Government will benefit by the transaction to the extent of $10,000,000.

It is from this Newfoundland supply of pulpwood that Cranston Williams, ANPA General Manager, had suggested the British Government might purchase raw material with ECA dollars to get their own newsprint machines into production.

Production of Newsprint In Sweden In 1947

Production of newsprint in Sweden totaled 274,000 metric tons in 1947, compared with 281,000 tons in 1939. Exports in 1947 amounted to 149,000 tons, or 54 percent of total production. In 1939, shipments were 176,000 tons or 63 percent of production. Exports in 1947 included 32,100 tons to European countries, 31,525 tons in Argentina, and 25,053 tons to the U. S.

The national average price asked for newsprint increased to $153 in U. S. currency per metric ton, f.o.b. Swedish port in 1947, from $34 per ton in 1937. The 1947 average included many spot offerings priced as high as $225 per ton.

Canadian, N. F. and U. S. Newsprint Production In May

Production in Canada during May 1948 amounted to 388,461 tons and shipments to 397,706 tons; production in the U. S. was 72,659 tons and shipments 71,553 tons. Output in Newfoundland was 32,338 tons and shipments 45,231 tons. Total North American production was 493,458 tons and shipments 514,490 tons, compared with 486,399 tons and 501,198 tons respectively in May 1947, and exceeding any May on record.

The Canadian mills produced 40,261 tons more in the first five months of 1948 than in the first five months of 1947, an increase of 2.2 percent. Output in the U. S. was 14,749 tons or 4.3 percent below that of the first five months of 1947, in Newfoundland production was 5,185 tons or 3.4 percent less, making a net increase of 20,327 tons or 0.9 percent more than in the first five months of 1947, also greater than in any preceding similar period.

Stocks of newsprint at the end of May were 84,222 tons at Canadian mills, 7,584 tons at U. S. mills, and 56,419 tons at Newfoundland mills, a combined total of 148,225 tons, compared with 169,257 tons on April 30, 1948, and 204,158 tons at the end of May 1947.

Paperboard Production Statistics

	For Weeks Ended		
	June 12 1948	June 5 1948	June 14 1947
Production	193,156	168,802	183,105
New Orders	171,337	222,226	146,726
Unfilled Orders	380,421	402,625	512,578
Percent of Activity—Current	101%		
Percent of Activity—Year to Date	101%		

Indices

Index of general business activity for the week ended June 12 rose to 151.3 from 146.0 in the preceding week, compared with 146.4 for the corresponding week of 1947.

Index of paperboard production sloped to 197.4 from 196.1 in the preceding week, compared with 187.1 in the corresponding week of 1947.

Comparative indexes for paper and paper board production as reported by AP&PA are shown in Table I.

Table I.—Index of Paper and Paper Board Production

	June 12 1948	June 5 1948	June 14 1947	June 15 1946	June 16 1945
Paper*	95.0	92.9**	107.2	104.0	91.5
Paperboard	101.0	87.0	103.0	98.0	93.0

* Tonnage made was practically the same as in the same week last year, although 1948 capacity was increased by 13.3 percent.
** Revised figure.

It takes foresighted mill management to give the industry advanced methods!

an example:

MICROJET Coating *at* NEWTON FALLS PAPER MILL

NEWTON FALLS PAPER MILL, INC.
NEWTON FALLS · NEW YORK

June 13, 1947

Mr. B. R. Newcomb, President
John Waldron Corporation
New Brunswick, New Jersey

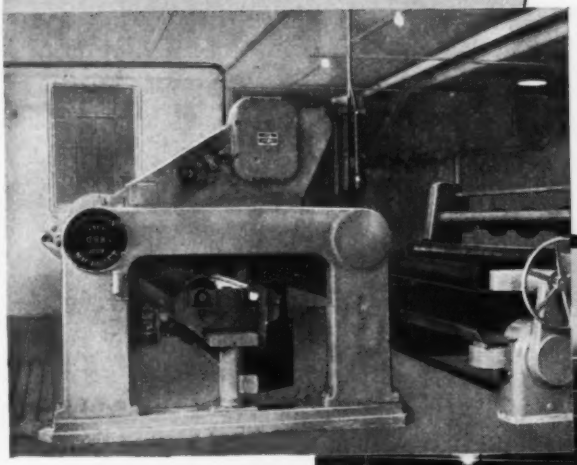
Dear Ben:

Our Coating Organization has finally reached a point where I feel it has become proficient enough in the operation of the "Micro-Jet" that I can honestly evaluate the machine itself. We are obtaining a production of paper as well as a quality of paper that is very satisfactory to us. The machine operates very smoothly at 900 feet, and within two months we expect to be running steadily at that speed.

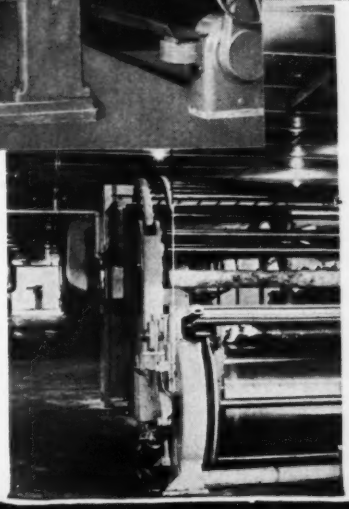
We wish to commend you and your organization for perfecting this machine, and we thank you for your many courtesies.

Sincerely yours,
NEWTON FALLS PAPER MILL, INC.
R. W. Hynes
President

RWH:b



Above: WALDRON Microjet Coating Unit featuring air blade applied high solid coating at Newton Falls Paper Mill, weights of four to six pounds, 25x38 (500) ream basis, and has the ability to apply even the highest weights of Baryta coatings.



At right: Winder end of Microjet line showing WALDRON Tension Rig and WALDRON Automatic Winder.

TO the foresighted management of Newton Falls Paper Mill, Inc. goes the credit for being the first to adopt an advanced method of coating that is now recognized as a major development in the science of coating.

Their WALDRON Microjet Coating equipment, operating in tandem with a ROSS Air Dryer, is coating and drying 102 inch wide paper at speeds up to 1,000 feet per minute, fully justifying the prediction made by Mr. R. W. Hynes shortly after the new coating line was installed.

As designers and builders of the Microjet Coaters, we are proud of the part we have played in this notable processing achievement.

Coating Machines
Creping Machines
Embossing Machines
Floor Cov. Machines
Gumming Machines
Laminating Machines
Printing Machines
Rubber Mill Machines
Wall Paper Machines
Waxing Machines
Winders and Slitters
Special Design Machines

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NEW YORK - 17
350 MADISON AVE.

BOSTON - 9
79 MILK ST.

BUILDERS OF QUALITY MACHINES SINCE 1827

IMPORTS

Newsprint

News Syndicate Co., Colabee, Baie Comeau, 7660 rolls.
H. G. Craig Co., Kermic, Donnacona, 348 rolls.
News Syndicate Co., Ted, Thorold, 1888 rolls.
Daily Mirror, Ethel Tombs, Gatineau, 308 rolls.
News Syndicate Co., Mimi, Thorold, 2333 rolls.
H. G. Craig Co., Newscarrier, Donnacona, 378 rolls.
R. A. Olsen, Donpaco, Donnacona, 355 rolls.
Madden Reeve Angel & Co., Inc., Mormacpenn, Helsingfors, 401 rolls.
Gaillet Hartwig, Mormacpenn, Gdynia, 9 rolls.
Green Kriegsman Paper Co., Mormacpenn, Gdynia, 9 rolls.
Aqua Shipping Co., G. T. D., Donnacona, 353 rolls.

Cigarette Paper

Suarez & Crespo, Meridian Victory, Venice, 5 cs.

Filter Paper

E. H. Sargent Co., Gripsholm, Gothenburg, 14 cs.
H. Reeve Angel & Co. Inc., American Shipper, London, 33 cs.

Wrapping Paper

(———), Mormacpenn, Stockholm, 130 rolls.

Drawing Paper

H. Reeve Angel & Co., Inc., American Shipper, London, 1 cs.

Paperhangings

W. H. S. Lloyd & Co., American Shipper, London, 4 cs., 31 bls.
W. H. S. Lloyd & Co., American Clipper, Manchester, 7 bls.

Wallpaper

Meadows Wye & Co., American Clipper, Liverpool, 3 cs. (samples), 1 cs. (books).

Photo Paper

American Express Co., American Shipper, London, 50 drums (base).
Lep Transport, Inc., American Shipper, London, 30 drums (base).

Bristol Boards

Keuffel & Esser Co., American Shipper, London, 3 cs.

Sulphite Paper

Kersten Shipping Agency, Gripsholm, Gothenburg, 272 rolls.

Serviettes

(———), Mauretania, Southampton, 8 crates.

Boxboard

Jay Madden Corp., Mormacpenn, Helsingfors, 114 rolls.

Wood Veneer Paper

Stevens Nelson Paper Corp., Tatra, Yokohama, 3 cs.

Pasteboard

Swedish Swing Blade Corp., Uruguay, Copenhagen, 2 rolls (corrugated).

Napkins

H. W. Robinson Co., Uruguay, Copenhagen, 12 ctns.

Tissue Paper

B. F. Drakenfeld & Co., American Clipper, Liverpool, 51 cs.
Stevens Nelson Paper Corp., Tatra, Kobe, 23 cs.

NEW YORK IMPORTS

WEEK ENDING JUNE 19, 1948

SUMMARY

Newsprint	14042 rolls
Cigarette Paper	5 cs.
Filter Paper	47 cs.
Wrapping Paper	130 rolls
Drawing Paper	1 cs.
Paperhangings	38 bls., 4 cs.
Wallpaper	4 cs.
Photo Paper	80 drums
Bristol Boards	3 cs.
Sulphite Paper	272 rolls
Serviettes	8 crates
Boxboard	114 rolls
Wood Veneer Paper	3 cs.
Pasteboard	2 rolls
Napkins	12 ctns.
Tissue Paper	74 cs.
Miscellaneous Paper	1457 rolls, 3 cs.

Miscellaneous Paper

Resolute Paper Products Corp., Gripsholm, Gothenburg, 104 rolls.
Lafayette National Bank, Gripsholm, Gothenburg, 58 rolls.
J. E. Bernard & Co., Gripsholm, Gothenburg, 82 rolls.
Manufacturers Trust Co., Gripsholm, Gothenburg, 1213 rolls.
Gerhard & Hey, Mormacsaga, Stockholm, 1 cs.
Sydney Lang, Wisconsin, Havre, 2 cs.

Rags, Baggings, Etc.

Bank of N. Y. Trust Co., Meridian Victory, Venice, 44 bls. old jute bagging.
Continental Bank Trust Co., Meridian Victory, Venice, 126 bls. waste bagging, 71 bls. old cotton rags.
Cowa & Co., Lanero, Recife, 154 bls. cotton waste.
H. Adlerstein, Exporter, Genoa, 42 bls. paperstock.
E. J. Keller Co., Inc., Flying Cloud, Bombay, 200 bls. old jute rags.
(———), Uruguay, Copenhagen, 134 bls. old bagging.
A. de Vries Corp., Pierre Victory, Antwerp, 53 bls. scrap bagging.
E. J. Keller Co., Inc., Pierre Victory, 80 bls. old waste jute bagging.
Cecil Kutz, Jean Lafitte, Antwerp, 262 bls. cotton waste.
Williamson Northrup Co., Mormacrio, Santos, 382 bls. cotton waste.
Loumar Textile By Products Inc., American Chief, Havre, 67 bls. old waste bagging.
J. P. Fleisig Co., American Chief, Havre, 37 bls. cotton rags.
Midwest Waste Material Co., American Chief, Havre, 77 bls. cotton rags.
Cowa & Co., Mormackite, Cabedello, 201 bls. cotton waste pickers.
J. P. Fleisig Co., American Scout, Havre, 33 bls. rags.

Casein

Borden Corp., Lanero, Buenos Aires, 500 bags (ground lactic).
American Plastics Corp., City of Newport, Melbourne, 1000 bags (rennet).

Gluestock, Etc.

(———), Agwiprincess, Tampico, 156 bls. gluestock.
John Gorvers, Cape Ann, Barranquilla, 114 rolls hidecuttings.
H. Remis, Santa Monica, Barranquilla, 70 bdls. hidecuttings.

BOSTON IMPORTS

WEEK ENDING JUNE 19, 1948

International Purchasing Co., Pierre Victory, Antwerp, 43 bls. old rope.

BALTIMORE IMPORTS

WEEK ENDING JUNE 19, 1948

Brown Bros. Harriman & Co., Uruguay, Sundsvall, 1500 bls. prime strong unbleached perforated sulphite pulp.
(———), Uruguay, Sundsvall, 3600 bls. prime bleached sulphite pulp, 200 2nd quality bleached sulphite pulp, 1275 bls. bleached sulphate pulp, 100 bls. prime bleached sulphate pulp.

PHILADELPHIA IMPORTS

WEEK ENDING JUNE 19, 1948

Castle & Overton Inc., American Clipper, Manchester, 56 bls. cotton gabardine rags.
(———), American Clipper, Manchester, 45 bls. mixed bagging.
(———), Blydendyk, Rotterdam, 12 bls. old cotton rags.
Central Penn National Bank, Mormacpenn, Gothenburg, 75 rolls newsprint.
Madden Reeve Angel & Co., Inc., Mormacpenn, Helsingfors, 116 rolls newsprint.
Tradesmans National Bank Trust Co., American Shipper, London, 102 bls. old webbing.
Pagel Horton & Co., Inc., Uruguay, Karskar-Gefle, 3515 bls. prime bleached sulphite pulp.
(———), Uruguay, 1 gesund, 2705 bls. prime bleached sulphite pulp, 875 bls. prime bleached sulphate pulp.

NORFOLK IMPORTS

WEEK ENDING JUNE 19, 1948

Elof Hansson, Inc., Blydendyk, Rotterdam, 198 rolls newsprint.
Brown Bros. Harriman & Co., Uruguay, Sundsvall, 6000 bls. prime strong unbleached sulphite pulp.
Perkins Goodwin & Co., Uruguay, Hernosand, 2712 bls, 2nd quality prime strong sulphite pulp.
Gottesman & Co., Inc., Uruguay, Hernosand, 609 1st quality kraft pulp.
A. de Vries Corp., Hibbing Victory, Antwerp, 107 bls. old scrap bagging.

April Statistics

WASHINGTON — Newsprint imports into the United States dropped in April to 349,649 tons, valued at $32,800,000, from 398,282 tons, valued at $37,400,000 in March, the Dept. of Commerce reported June 17. However, this compares with 315,334 tons imported in April a year ago, an increase of 34,315 tons.

Woodpulp imports also dropped to 171,000 tons from 208,000 in March, valued respectively at $20,300,000 and $25,800,000. Imports of jute and jute butts fell to 7,899 tons from 11,097 tons in the same two comparative months, valued respectively at $2,700,000 and $3,700,000.

Paper and paper manufactures exported in April rose to $11,100,000 from the March level of $10,500,000.

A rise in woodpulp exports from this country was noted, from 4,906 short tons in March, to 6,396 tons in April.

YOU GET HUSKY, DEPENDABLE EQUIPMENT

BJ

with the new BJ double-duty Pulp Pump

NEWEST IN THE LINE OF BJ PUMPS	
Capacities	*400 to 4000 gpm*
Heads	*40 to 200 feet*
Sizes	*3"-4"-5"-6"-8"-10"-12"*
Stock Consistency	*Up to 6%*

TO INSURE CONTINUITY OF OPERATION, SPECIFY A BJ PULP PUMP. The new Byron Jackson *standard* Pulp Pump features dismantling and inspection of bearing bracket, impeller and liners, without (1) disconnecting suction or discharge piping or (2) removing the driver. Specially designed to handle high consistency pulp. This new pump is built for years of trouble-free service. Its large impeller eye keeps entrance velocity low. Flow is smooth and positive. There is no clogging. Constructed with an extra heavy case, oversized shaft, double row radial and thrust bearings, the BJ Pulp Pump handles up to 6 percent stock.

CONVERT TO ACID AND LIQUOR SERVICE, or vice versa. This double-duty Pulp Pump is easily converted from pulp stock service to acid and liquor service merely by changing a few parts. *For hot fluid services,* the standard Pulp Pump stuffingbox can be replaced with a water-jacketed stuffingbox. Where several BJ pumps of different sizes are used, interchangeability of group parts means smaller inventories, less down time and lower replacement parts cost.

OTHER DESIGNS FOR PULP AND PAPER INDUSTRY. The *standard* Pulp Pump is one of many BJ designs for pulp and paper pumping requirements. The BJ *Special-Duty* Pulp Pump, similar in design and construction to the standard line, has larger passages enabling these pumps to handle pulp stock of higher consistency.

BJ Screw Feeder Pumps will feed still higher consistency pulp into the impeller eye. The standard Pulp Pump will handle 5 to 7 percent stock when equipped with the Screw Feeder Pump. The Special-Duty Pump will handle 6 to 8 percent stock when so equipped.

For longer life, increased dependability, and greater flexibility, choose the new BJ Pulp Pump. Our new 12-page booklet on the complete line of centrifugal pumps for the Pulp and Paper Industry is soon to be available. Write today for your copy . . . no obligation, of course.

Byron Jackson Co.

Established 1872

LOS ANGELES 54, CALIFORNIA

Offices in Principal Cities

PRICES

The quotations given below are indicative of trends in an open market. At the moment they can be of little more value, for while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

NEW YORK

Paper

(Delivered New York)

Standard News, per ton—
Rolls, contract .... $93.00/$96.00
Sheets 109.00/109.00

Kraft—per cwt.—Carload Quantities
Zone A Deld. 40 lb. base wgt.

Superstandard Wrapping	$9.00/ —
No. 1 Wrapping	7.25/ 8.00
Standard Wrapping	6.50/ —
Standard Bag	6.50/ —

Tissues—Per Ream 24x36 (480) 11 lb. Zone 1.

Wh. No. 1 Frd.	$1.84/$2.00
Wh. No. 1 M. G.	1.94/ 2 00
Wh. No. 1½	1.60/ —
Wh, No. 2	1.75/ —
Kraft Anti-Tar	1.65/ —
Kraft Unbl.	1.85/ —
Manila No. 2	1.62/ —
Shred. Wh. No. 1 cwt.	1.10/ 1.50

Toilet—Per Case of 100 rolls 1 M Sheets.

Unbleached	$8.50/$10.00
Bleached	8.50/ 10.00

Paper Towels—Per Case of 3750—Zone 1.

Wh. Jr. M'tif'd 9¼x9½	$5.15
Br. Sr. M'tif'd 10x12	3.60
Br. Jr. M'tif'd 9½x9¾	3.10
Br. Jr. Sgl. fold 10x10¾	3.15

Manila—per cwt.—C-l. f.a.

No. 1 Jute Tag	$14.50/ —
Reg. Jute Manila	13.25/$15.50
No. 1 Manila	9.75/ —
5 lb. Manila	10.75/ 11.25

Boards, per ton—

Plain News	$92.50/ —
Filled News	94.00/ —
Plain Chip	90.00/ —
Sgl. Mla. L-d. Chip*	100.00/102.50
White Pat. coated*	120.00/ —
Kraft Liners 42 lb.	100.00/ —
Kraft Corr. .009	105.00/ —
Binders Boards	126.00/ —

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1:

Rag Content Bonds and Ledgers—White, 16 lb.

Bonds, per cwt.

	Carton	4 C't'n	Ton
100% Rag Ext.			
No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Ledgers, per cwt.

100% Rag Ext.			
No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Sulphite Bonds and Ledgers—White, 16 lbs.

Bonds, per cwt.

No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.55	16.85

Ledgers, per cwt.

No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

Tree Sheet Book Papers—White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated	20.40	$19.50
No. 2 Glossy Coated	19.15	18.30
No. 3 Glossy Coated	18.40	17.60
(Per cwt.)	Case	Ton
No. 1 Antique (Watermarked)	$15.90	$15.15
No. 2 Offset	15.15 to 17.90	14.60 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. & S. C.	15.40	14.65
B Grade E. F.	13.90	13.30
B Grade S. C.	14.40	13.70

Wood Pulp

Domestic mill contract prices delievered with varying freight allowances.

	Per Short ADT
Groundwood	$80.00/$81.00
Unbleached Sulphite	124.00/ —
Bleached Sulphite	125.00/135.00
Bleached Soda	130.00/ —
Bleached Sulphate	175.00/185.00
Unbleached Sulphate Northern	125.00/155.00
Unbleached Sulphate Southern	130.00/145.00

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

	Per Short ADT
Reg. North. Kraft	125.00/130.00
Unbleached Sulphite	125.00/126.00
Bleached Sulphite	125.00/135.00
Glassine Unbleached Sulphite (no freight allowance)	120.00/ —
Bleached Soda	130.00/ —
Groundwood	80.00/ 85.00
Sideruns Pulping News	80.00/ 90.00
Hardwood and Specialty Grades	Nominal

Swedish Quotations

On dock, Atlantic Ports

Bleached Kraft	185.00/195.00
Bleached Sulphite	185.00/195.00
Unbleached Sulphite	130.00/175.00
Unbleached Kraft	140.00/147.50

Finnish Quotations

On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite	$187.50/ —
Unbleached Sulphite	155.00/157.00
Unbleached Sulphate	147.50/ —

New Domestic Cotton Cuttings

(F.O.B. Shipping Point Plus Dealer's Commision)

White Shirt	$11.50/$12.00
Unbleached Muslin	12.00/ 12.50
Light Silesias	9.00/ 9.25
White Back Blue Overalls	9.00/ 9.50
Blue Overalls	8.00/ 8.25
Fancy Shirt	6.00/ 6.25
Light Percales	8.50/ 8.75
Light Prints	7.50/ 7.75
No. 1 Washables	5.00/ 5.25
Bleachable Khaki	7.50/ 8.00
Unbleachable Khaki	6.50/ 7.00
Cottonades	5.50/ 5.75

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$5.50/ $6.00
No. 1 Whites Miscellaneous	4.50/ 5.00
No. 2 Whites Repacked	3.50/ 3.75
No. 2 Whites Miscellaneous	3.00/ 3.50
Blue Overalls	3.75/ 4.00
Thirds and Blues Repacked	3.25/ 3.50
No. 1 Roofing Rags	1.70/ 1.80
No. 2 Roofing Rags	1.60/ 1.70
No. 3 Jute Bagging	1.50/ 1.60
No. 4 Brussels and hard back carpets	1.50/ 1.60
No. 5A Roofing Rags	1.50/ 1.60

New Foreign Cotton Cuttings

(Prices to Mill, F.O.B. Dock, N.Y.)

	Per 100 lbs.
New Dark Cuttings	$5.50/ $5.75
New Mixed Cuttings	6.25/ 6.50
Light Silesias	9.25/ 9.50
Light Flannelettes	9.25/ 9.50
New White Cuttings	12.00/ 13.00
New Unbleached Cuttings	12.25/ 13.00
Fancy Shirt Cuttings	6.50/ 7.00
Light Prints	7.75/ 8.00
Bleachable Khaki, No. 1	7.00/ 7.50
Unbl. Khaki, No. 1	6.25/ 6.75

Old Foreign Rags

(Prices to Mill, f.o.b. dock, N.Y.)

	Per 100 lbs.
No. 1 White Linens	$14.00/$16.00
No. 2 White Linens	12.00/ 13.00
No. 3 White Linens	8.00/ 9.00
No. 4 White Linens	8.00/ 9.00
No. 1 White Cottons	8.00/ 10.00
No. 2 White Cottons	7.00/ 8.00
No. 3 White Cottons	6.00/ 6.50
No. 4 White Cottons	4.00/ 4.50
Extra Light Prints	6.50/ 7.00
Old Light Prints	4.50/ 5.00
Med. Light Prints	4.00/ 4.50
Dutch Blue Cottons	5.25/ 5.50
Checks and Blues	4.00/ 4.25
Linsey Garments	2.35/ 2.50
Dark Cottons, European	2.30/ 2.35
Dark Cottons, Egyptian	3.25/ 3.50
Old Shopperies	2.20/ 2.30
New Shopperies	2.25/ 2.30

Bagging

(Prices to Mill, f.o.b. N.Y.)

	Per 100 lbs.
Foreign Gunny, No. 1	$6.75/ $7.25
Domestic Gunny, No. 1	6.75/ 7.25
Heavy Wool Tares	6.25/ 6.50
No. 1 Scrap Bagging	5.50/ 5.75
Roofing Bagging	1.50/ 1.75
Foreign Manila Rope	6.00/ 6.75
Domestic Manila Rope	6.50/ 6.75
Jute Strings	5.00/ 5.25
No. 1 Sisal Strings	5.25/ 5.50
Mixed Strings	1.75/ 2.50

Waste Paper

Base Prices to Mills for Average Packings

(Dollars Per Ton)

F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	$155.00/$165.00
No. 1 Hard White Envelope Cuts	145.00/ 150.00
No. 1 Hard White Shavings, unruled	140.00/ 150.00
No. 1 Hard White Shavings, ruled	110.00/ 120.00
Soft White Shavings, one cut	140.00/ 150.00
No. 1 Soft White Shavings	125.00/ 135.00
Soft White Shavings, Misc.	115.00/ 125.00
No. 1 Fly Leaf Shavings	45.00/ —
No. 1 Groundwood Fly Leaf Shavings	35.00/ —
N. 1 Heavy Books & Magazines	25.00/ 26.00
Mixed Books	15.00/ 18.00
No. 1 White Ledger	75.00/ 80.00
Col. Ledger	55.00/ 60.00
Manila Tab. Cards	95.00/ 100.00
New Manila Envelope Cuttings, one cut	100.00/ 110.00
New Manila Envelope Cuttings	65.00/ 75.00
Extra Manilas	25.00/ 30.00
Mixed Kraft, Env. & Rag Cuttings	75.00/ 85.00
Kraft Envelope Cuttings	100.00/ 110.00
Triple Sorted, No. 1 Brown Soft Kraft	65.00/ 75.00
New Kraft Corrugated Cuttings	70.00/ 75.00
No. 1 Assorted Old Kraft	50.00/ 55.00
New Jute Corrugated Cuttings	27.00/ —
Old 100% Kraft Corrugated Containers	35.00/ 40.00
Old Corrugated	23.00/ 25.00
No. 1 News	11.00/ 12.00
No. 1 Mixed Papers.	9.00/ 10.00
Box Board Cuttings.	8.00/ 9.00
White Blank News	75.00/ 85.00
Overissue News	16.00/ 17.00
Mill Wrappers	22.00/ 24.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)

Coarse Polished—	
India	.34½/ .35¾
Fine Polished	
Fine India	.41¼/ .45
Unpolished—	
Paper Makers	.31 / .33½
Tube Rope	.29¾/ .32¼
Wrapping	.32¾/ .36½
Cotton	.63¼/ .66¾

(Hard Fiber)

Mex. Sisal	.21 / .27
Manila (Reprocessed)	.30 / .32

(American Hemp)

Polished Hemp	.36¼/ .60
Unpolished	.32¼/ .54

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—	
New White No. 1	.11 / .12
New White No. 2	nominal
Light Silesias	.07½/ .08
Black Silesias, soft	.06½/ .07
New Unbleached	.10½/ .11¼
Washable Prints	.06½/ .07
Washable No. 1	.05 / .05½
Blue Overall	.07½/ .08
Cottons—According to grade—	
Washable Shredding	.03½/ .04
Fancy Percales	.06¾/ .07¼
New Black Soft	nominal
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.06 / .06½
Bleachable Cotton Cuttings	.07 / .07½
Men's Corduroy	.05½/ .06
Ladies' Corduroy	.05 / .05½
Cottonades	.05½/ .06

Domestic Rags (Old)

(F.O.B. Eastern Shipping Point)

White No. 1 —Repacked	4.50 / 5.00
Mixed White	4.00 / 4.25
White No. 2—Repacked	3.50 / 3.75
Thirds and Blues—Miscellaneous	2.25 / 2.50
Repacked	2.75 / 3.00
Roofing Stock—	
Foreign No. 1	nominal
Domestic No. 1	1.85 / 1.90
Domestic No. 2	1.75 / 1.80
Roofing Bagging	1.65 / 1.70
Old Manila Rope	6.25 / 6.50

Bagging

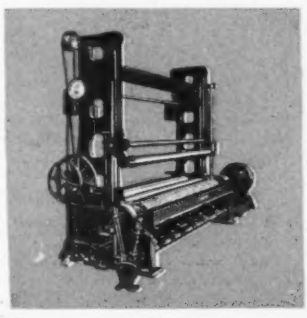
(F.O.B. Eastern Shipping Point)

Gunny No. 1—	
Foreign	nominal
Domestic	4.75 / 5.25
No. 1 Clean Bright—Sisal Strings	.04½/ .05
No. 2 Clean Bright—Sisal Strings	.03½/ .04
Sisal Jute	.02¾/ .03
Scrap—	
No. 1	5.00 / 5.50
No. 2	2.50 / 3.00

Long life

New mounting and adjustment of the slitter elements greatly reduce thread-up time on Langston Slitters and Roll Winders. Helical nitrided gears used in the drive train assure a more silent drive. These and other improvements make Langston Winders stand up under a long life of dependable, trouble-free service.

Samuel M. Langston Company, Camden, N. J.



Langston

SLITTERS AND ROLL WINDERS

Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	$115.00
No. 1 Hard White Shavings, unruled	100.00/	—
Soft White Shavings, One cut	90.00/	95.00
White Blank News	75.00/	—
Soft White Shavings	80.00/	—
No. 1 White Ledger	85.00/	90.00
No. 1 Heavy Books & Magazines	24.00/	26.00
Overissue Magazines	nominal	
New Manila Envelope Cuttings	80.00/	—
No. 1 Assorted Old Kraft	60.00/	65.00
No. 1 Mixed Paper	11.00/	12.00
Box Board Cuttings	10.00/	11.00
Kraft Corrugated Cuttings	90.00/	100.00
Old Corrugated	24.00/	26.00
Overissue News	20.00/	22.00
No. 1 News	13.00/	15.00

BOSTON

Old Papers

(F. o. b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled	6.25	/ 6.75
No. 1 Hard White Shavings, ruled	6.00	/ 6.50
Soft White Shavings, Misc.	6.00	/ 6.25
No. 1 Fly Leaf Shavings	—	/ —
No. 2 Fly Leaf Shavings	4.25	/ —
No. 1 Groundwood Fly Leaf Shavings	1.75	/ 2.00
No. 2 Groundwood Fly Leaf Shavings	1.50	/ 1.75
Mixed Colored Shavings	2.00	/ 2.25
New Manila Envelope Cuts, one cut	4.50	/ 4.75
Hard White Envelope Cuts, one cut	7.00	/ —
Triple Sorted No. 1 Brown Soft Kraft	3.75	/ 4.00
Mixed Kraft Env. & Bag Cuttings	4.00	/ 4.25
Kraft Envelope Cuttings	5.00	/ 5.50
No. 1 Heavy Books & Magazines	1.75	/ —
New Manila Envelope Cuttings, one cut	—	/ —
New Manila Envelope Cuttings	4.00	/ 4.25
White Tabulating Cards	5.00	/ —
Groundwood Tabulating Cards	1.50	/ 1.75
White Blank News	2.25	/ 2.50
No. 1 Assorted Old Kraft	3.50	/ 4.00
No. 1 Mixed Paper	.47½/	—
Overissue News	.90	/ 1.00
No. 1 News	.55	/ .60
Box Board Cuttings	.60	/ .70
New Corrugated Cuttings, Kraft	2.75	/ 3.00
Old Kraft Corrugated Containers	2.00	/ 2.25
Old Corrugated Containers	—	/ 1.10
Jute Corrugated Cuttings	1.07½/	—
Paper Strings	2.00	/ 2.25

Bagging

(F. o. b. Boston)

Gunny Bagging—		
Foreign	—	/ 4.75
Domestic	6.25	/ 6.50
Sisal Rope No. 1	6.25	/ —
Sisal Rope, No. 2	5.50	/ —
Mixed Rope	3.00	/ —
Mixed Strings	1.60	/ —
Transmision Rope—		
Foreign	nominal	
Domestic	3.00	/ 3.50
Manila Rope—		
Foreign	nominal	
Domestic	6.50	/ —
Soft Jute Rope	6.25	/ 6.50
Jute Carpet Threads	6.00	/ —
Bleachery Burlap	—	/ 7.00
Scrap Burlap—		
Foreign	6.00	/ 6.25
Domestic	6.00	/ 6.25
South America	6.00	/ 6.25
Wool Tares		
Foreign	6.25	/ —
Domestic	6.25	/ —
Austr. Wool Pouches	7.50	/ —
New Zealand Wool Pouches	7.50	/ —
New Burlap Cuttings	6.50	/ —
Heavy Baling Bagging	5.25	/ 5.75
Paper Mill Bagging	5.50	/ 5.75
No. 1 Roofing Bagging	2.25	/ 2.50

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—		
New Light Prints	.07½/	—
Fancy Percales	.08	/ —
New White No. 1	.11	/ .11¾
New Light Flannelettes	.08	/ .08½
Canton Flannels, Bleached	.10	/ .11
Underwear Cutters, Bleached	.11½/	—
Underwear Cutters, Unbleached	.11	/ .12
Silesias No. 1	.08	/ .08½
New Black Silesias	.04½/	—
Red Cotton Cuttings	.05	/ —
Blue Overalls	—	/ .08½
Soft Unbleached	.11	/ .12
Blue Cheviots	.08½/	.09
Fancy	.00	/ —
Washable	.06	/ —
Khaki Cuttings	.06½/	.07½
Corduroy	.03¼/	—
Men's Corduroy	.04½/	—
Ladies' Corduroy	.04	/ —
Khaki Canvas	—	/ .06
B. V. D. Cuttings	.11½/	—

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—		
Repacked	5.00	/ 5.50
Miscellaneous	4.50	/ 5.00
White No. 2—		
Miscellaneous	2.65	/ —
Twos and Blues, Repacked	2.75	/ —
Old Blue Overalls	4.00	/ 4.50
Thirds and Blues, Repacked	2.20	/ —
Miscellaneous	1.80	/ —
Black Stockings	3.50	/ 4.00
Roofing Stock—		
No. 1	1.70	/ —
No. 2	1.60	/ —
No. 3	1.50	/ —
No. 4	1.50	/ —
No. 5, Quality A.	1.60	/ —
Quality B.	1.50	/ —
Quality C.	.95	/ —
Old Manila Rope	6.00	/ —

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—		
No. 1 Hard White Envelope Cuts, one cut	$150.00/	—
No. 1 Hard White Shavings, unruled	140.00/	—
No. 1 Soft White Shavings	120.00/	—
No. 1 White Ledger	85.00/	—
No. 1 Heavy Books & Magazines	35.00/	—
White Blank News	80.00/	85.00
Mixed Kraft Env. & Bag Cuttings	90.00/	110.00
No. 1 Assorted Old Kraft	35.00/	—
Overissue News	24.00/	—
No. 1 News	11.00/	—
No. 1 Mixed Paper.	11.00/	—
Old Corrugated	23.00/	—
Mill Wrappers	17.00/	—

MARKETS

Blanc Fixe

Market unchanged. Demand strong. Prices firm. Pulp is currently quoted at $85 in bags, car lots at works, 6 cents per pound, l.c.l., deld.; by-product $75 per ton, car lots, at works, 6 cents per pound, l.c.l., deld.

Bleaching Powder

Supply adequate. Delivery good. Prices range from $3.75 to $4 per 100 pound drums, l.c.l. works.

Casein

Prices steady though market undertone is stronger. Low domestic output gives serious concern. Current prices on processed acid precipitated casein at 31 to 33 cents per pound for domestic grades and 28 to 29½ cents for imported grades, f.o.b. shipping point.

Caustic Soda

Demand heavy. Supply tight. Price rise of 25c per cwt. July 1. Solid caustic is reported at $2.85 per cwt.; flaked and ground is quoted at $3.25 per cwt. in 400 pound drums, $3.75 to $4 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.25 per cwt.; liquid 73 percent in tank cars at $2.35 per cwt., at works.

China Clay

Domestic grades and imported in good supply. Filled is $9 to $11.50 per ton, car lots; coating clay is $14 to $22. Imported clay quotation, short tons, $16 to $35, export warehouse.

Chlorine

Supply moving normally as strikes are settled, but not likely to improve in view of heavy summer demand. Prices rise 15c July 1. Currently quoted at $2.25 per cwt. in single unit tank cars, at $2.55 to $3.75 per cwt., in multi-unit tank cars, f.o.b., works.

Rosin

Supply good. Domestic buying shows price resistance. Supplies moving to western Europe. Gum rosin in drums per 100 pounds net in car lots, f.o.b. Savannah; B, $6.50; G, H, I, K, $7.45. Wood rosin per 100 pounds net, car lots, f.o.b. Savannah; B, $4.50 to $5; FF, $5.50 to $6.50.

Rosin Size

Seventy percent gum and pale wood grades. Supply ample. Demand good. Tank cars $6.15 to $6.25 f.o.b. southern shipping point.

Salt Cake

Demand continues ahead of supply with slight improvement in shipments. Production under contract. Domestic salt cake is quoted at $25 to $28.

Soda Ash

Supply tight. Deliveries behind schedule. Prices rise 10c July 1. Current prices, car lots, per 100 pounds: in bulk, $1.10; in paper bags, $1.30; and in barrels, $1.70.

Sodium Bicarbonate

Strong demand with supply good. Reported as $1.85 per cwt. paper bags, carload lots. Price rise 10c July 1.

Starch

Prices unchanged. Demand steady. Supply good. Pearl grade quoted at $7.00 per 100 pounds; powdered starch at $7.12 per 100 pounds; car lots, New York.

Sulphate of Alumina

Prices unchanged. Supply steady. The commercial grades are quoted at from $1.30 per 100 pounds, in bags, car lots, f.o.b. works. Iron free is $2 per 100 pounds in bags, car lots, at works.

Sulphur

Production shows heavy gain. Prices unchanged. Supplies ample. Annual contracts are quoted at $16 to $18 per long ton, f.o.b. mines; the price f.o.b. at Gulf ports is $17.50 to $19.50 per long ton.

Talc

No change in domestic market. Demand continues far in excess of supply. Domestic grades are currently quoted at $23 per ton in paper sacks, f.o.b. mills; Canadian at $35 and up per ton. All prices in car lots.

Titanium Dioxide

Demand continues extremely tight with no early improvement seen. Prices unchanged. Shipments on allocation. Anastase 17½c pound carload lots, 18-18½c l.c.l., rutile, 19½c pound carload lots, 20-20½c l.c.l.; 50-pound bags, f.o.b. plant, minimum freight allowance.

productivity—using what we grow,
growing what we use.

Roy K. Ferguson
PRESIDENT

ST. REGIS PAPER COMPANY

Freedom's Rings

When a tree is made into publication paper, every ring of its life fulfills a proud destiny. It adds to the power of the freedom of the press.

As one of the largest producers of fine publication papers, St. Regis takes pride in their ultimate use. For, in these times, freedom grows sweeter by the day—and we, who enjoy it, more blessed.

The St. Regis mills which produce these grades of paper can supply enough for over a billion average weight magazines a year! Grave or gay . . . controversial or conservative . . . all the words in them have one thing in common. They *dare* to be written. They *dare* to be printed.

When we see our great facilities producing stronger, lighter, brighter papers we feel pride is not amiss. And especially, in view of their *economy*. In this land of the free you buy, for twenty cents or even less, the magazine it would otherwise cost a king's ransom to produce, in a single copy!

ST. REGIS PAPER Company

230 PARK AVENUE, NEW YORK 17, N. Y.

Quick Facts ABOUT ST. REGIS . . .

- 1,800,000 ACRES OF TIMBERLAND
- MILLS & PLANTS IN 30 LOCATIONS
- ASSETS OVER 130 MILLION DOLLARS
- 13,115 EMPLOYEES
- OVER 15,000 STOCKHOLDERS

PRINTING PUBLICATION AND CONVERTING PAPERS

Magazines—Mail Order Catalogs—Telephone directories—Books
Coated and uncoated for offset, letterpress, roto. Specialty and converting papers

PAPER FOR MULTIWALL BAGS

PAPER FOR PANELYTE

Cement, Fertilizer, Limestone, Chemicals, Feed, Flour, Sugar, Paintstuffs—and more than 400 other products.

The structural laminated plastic for Refrigeration, Electrical, and Radio industries. Decorative Panels for table tops and furniture.

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Call the Railway Supply sales office nearest you for full information and price quotations on Rayco Linter Cotton as a base material in the manufacture of fine cotton content paper.

Our new expanded Rayco Linter Division with headquarters in Memphis, Tennessee and branch offices at the other key procurement centers: Dallas, Atlanta and Charlotte, places our four government licensed graders in constant contact with the mill sources.

For an in-the-mill demonstration phone, wire or write the sales office nearest you.

The RAILWAY SUPPLY & MFG. CO. and Affiliates

Specialists in Grading, Marketing and Processing Cotton Fibers

General Offices: CINCINNATI, OHIO

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RAYCO

LINTER COTTON

FINANCE

Dividends Declared

MINNEAPOLIS — The Minnesota & Ontario Paper Co., on June 14, declared a dividend of 50 cents per share, payable July 20 to stockholders of record June 30.

NEW YORK — West Virginia Pulp & Paper Co. sales for quarter ended April 30 were $23,077,466.

ALBANY, N. Y. — A. P. W. Products Co., Inc., ordered a dividend of 12½ cents on the common, payable July 19 to stock of record June 28. The company paid an initial of like amount January 19.

SANDUSKY, Ohio — Hinde & Dauch Paper Co. sales for quarter ended March 31 amounted to $9,070,777.

ROCHESTER, N. Y.—The Haloid Company announced the quarterly dividend of 20 cents a share on the common stock and $1 on the preferred, payable July 1 to holders of record June 15.

NEW YORK—Oxford Paper Co. declared a regular dividend of 20 cents on the common stock, payable July 15 to holders of record July 1.

EAST WALPOLE, Mass.—Bird & Son, Inc., declared a regular dividend of 25 cents on the common stock, payable June 30 to shareholders of record June 21.

ADRIAN, Mich.—The Simplex Paper Corp. declared a regular quarterly dividend of 20 cents on common, payable July 7 to stock of record June 25.

CAMDEN, N. J. — MacAndrews & Forbes Co. declared a regular dividend of 50 cents on the common stock and a regular quarterly dividend of $1.50 on the preferred, both payable July 15 to holders of record June 30.

HARTSVILLE, S. C.—Sonoco Products Co. voted a regular dividend of 25 cents on the common, payable July 1 to shareholders June 21.

Survey Service Advantages of Paper Cups vs Glasses

A new high in scientific impartiality is shown by an objective study on the cost of paper cups versus glasses in a survey just released.

"No appreciable difference in service advantage could be observed in favor of either glasses or paper cups," says the report made by Business Research Corp. "Because of the difference in weight, there is a theoretical advantage in favor of paper cups but it could not be demonstrated in practice." The survey did find that paper cups were cheaper than glasses in six comparative studies in soda fountains of various sizes across the country.

Also the survey found that the time of collecting soiled paper cups from counter or table can be shortened by nesting and crushing them, an advantage which can be greatly increased by providing separate cans or boxes located conveniently at the fountain for final disposal of paper cups.

Another comment of interest was: "Whatever labor and expense is employed in reconditioning glasses for further use is saved when paper cups are used. The problem of computing the amount of saving is complicated by the fact that most fountains use dishes which still have to be washed. Consequently the use of paper cups does not entirely do away with the dishwashing operation in some locations. It does however relieve it everywhere. The amount of relief can be determined by finding the amount of labor and materials used in washing dishes and glasses, and reducing them by the proportion which the number of glasses bears to the total number of dishes and glasses."

The survey results are summarized in a pamphlet, "It Costs Less with Paper" which may be obtained from The Paper Cup and Container Institute, 1790 Broadway, New York 19, N. Y.

St. Lawrence Plan Goes To Stockholders

NEW YORK—Revised recapitalization plans for the St. Lawrence Corp., Ltd., and its subsidiary, St. Lawrence Paper Mills Co., Ltd., were presented in a letter to shareholders, dated June 15. The letter was accompanied by notice of special meetings of stockholders on July 7 and 8 to vote upon the proposals.

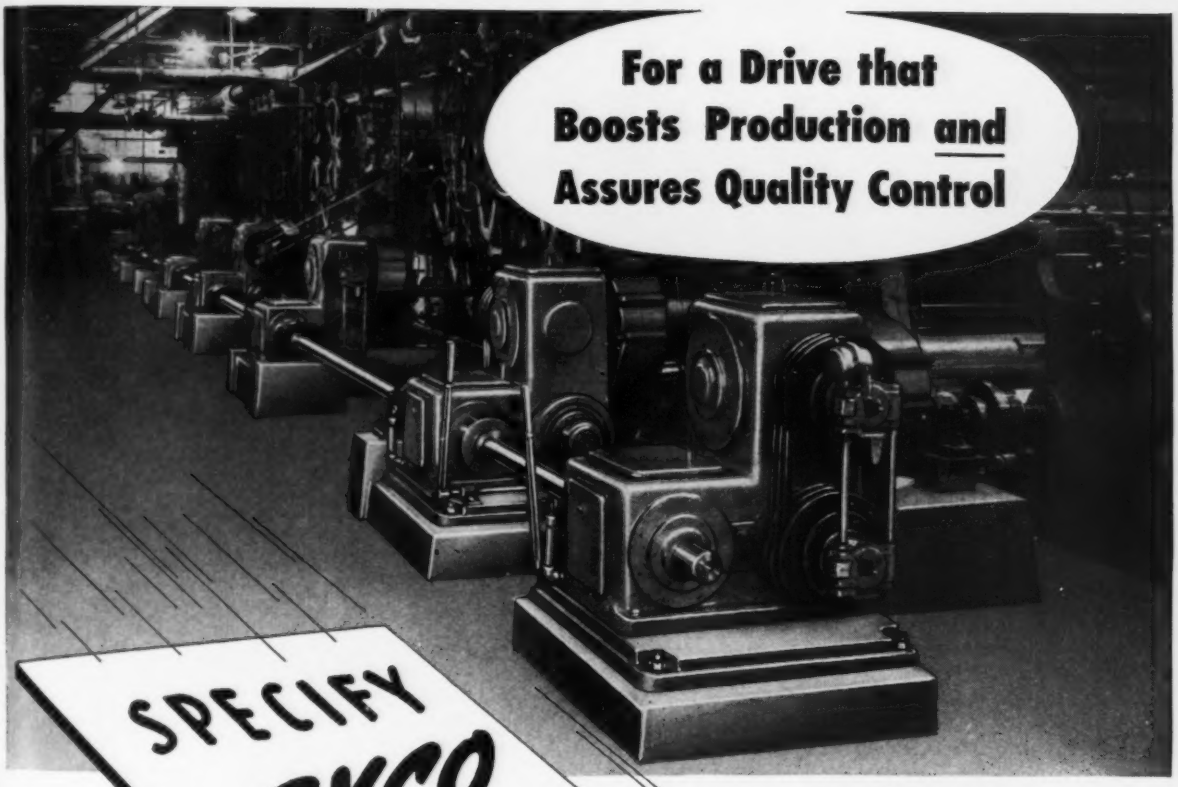
The parent organization said that the plans were interdependent and that both must be approved before either can become effective.

Under the new plan for St. Lawrence Corp., Ltd., which is a holding company, each share of the present 4 percent cumulative convertible preferred Class A stock, $50 par value, would receive a cash dividend of $2, one share of the new $2 cumulative convertible preferred stock, $49 par, and one share of the 75-cent second cumulative preferred issue, $1 par.

The revised plan for the paper mills company provides that each 6 percent cumulative preferred share receive $7.75 in cash, one share of the new $6 first cumulative preferred stock, $99 par, and one share of $2.40 second cumulative preferred stock, $1 par. Each share of the common stock would receive one share of the new common issue.

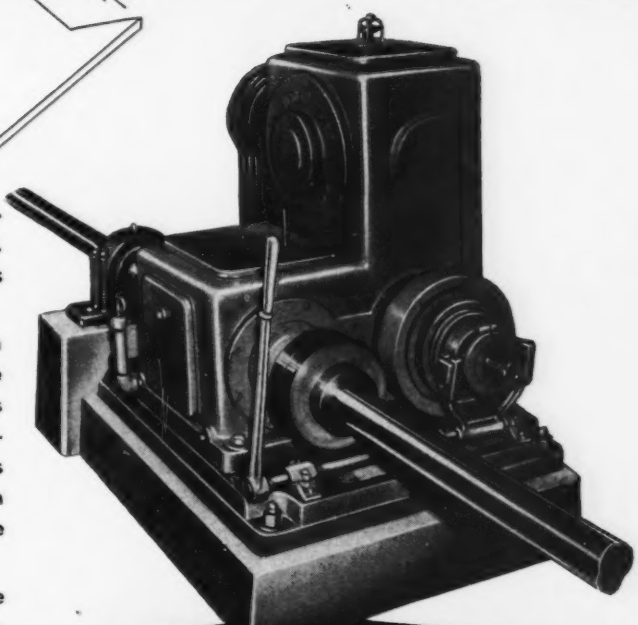
The companies said that the cash payments and the new second preferred issues would wipe out the arrearages on the present preferred stock issues.

Based on current earnings, the companies said, the boards of directors expect that regular quarterly dividends will be paid on the new preferred issues beginning in October.



For a Drive that Boosts Production and Assures Quality Control

SPECIFY SYCO



Installation of SYCO Drives has helped to increase paper output on each installation. SYCO contributes to quality control because it is smooth running . . . all the draws stay put.

The precise control mechanism of the modern SYCO Paper Machine Drive facilitates quick, close adjustment of sectional speed . . . then maintains the selected speed without departure. SYCO's interlocking synchronization holds the individual sections in precise speed ratio — preserving uniform tension on the sheet at all times. Breaks are fewer — the machine stays in production with less time out.

SYCO's exact speed control is matched by the ruggedness of its soundly engineered mechanism. SYCO is built for long trouble-free life.

The compact, self-contained modern SYCO drive requires less space, permitting clean, accessible uncluttered space around the machine.

Can the Modern SYCO Paper Machine Drive earn dividends in *your* mill? Write us for full details!

SYCO

MANUFACTURING CORPORATION

Syracuse, N. Y.

Indictments Returned

(Continued from page 13)

ger of its wallpaper division, George F. Mellen of Glens Falls, N. Y.; the Prager Co., Inc., of Worcester, Mass.; United Wallpaper Inc., and its president, William H. Yates of Chicago, and York Wall Paper of York, Pa.

William H. Yates, president of United Wallpaper, Inc., Chicago, commenting upon the indictment, said on June 18:

"The charges which have been made against us relate to alleged technical violations of the law as closely construed by legal specialists and can only be determined after a fair trial in our courts.

"This company, along with many other wallpaper manufacturers, is a member of The Wall Paper Institute. The objectives of that organization have been, through research and analysis, to constantly improve wallpaper, and to improve production and distribution methods. This work has been undertaken to the end that the advantages of wallpaper could be made most widely available to all American homes at the lowest prices consistent with the cost and quality of our merchandise.

"Plans directed toward that goal were filed with the Department of Justice by the Institute shortly before V-J Day. Materialization of those plans in the post-war period has held down prices at which wallpaper is being offered to the consumer to levels well below those otherwise warranted by the increased cost of operations. Those plans now constitute, we are informed, the basis of one of the charges against this company as members of the Institute.

"As yet, neither the company nor our attorneys have had the opportunity to study these charges. Consequently, we cannot make any further detailed statement at this time."

Which of these jobs can TAMOL do better for you?

PITCH CONTROL. Through the years, Rohm & Haas TAMOL P has demonstrated its value for positive pitch control on sulfite and groundwood pulps . . . Original cost is low (2 to 3 pounds per ton of pulp being sufficient generally)—and costly shutdowns for cleanups are minimized. TAMOL P is non-abrasive and non-corrosive. It is supplied in convenient dry form.

PIGMENT DISPERSION. Rohm & Haas TAMOL P is an efficient dispersing agent and deflocculant for calcium carbonate, titanium dioxide, clays, carbon black and other pigments. It is highly effective in alkaline systems. It is very useful in promoting fluidity in starch-bound coating colors.

GLUE PRECIPITATION. Rohm & Haas TAMOL P, used as a precipitant for animal glue in the beater, results in highly increased retention. It is added after the size, alum and glue solution—and is also used with the animal glue in the head-box or beater to aid in retention of fillers and fines.

If you have these manufacturing problems, write today for further information regarding TAMOL P—another of the Rohm & Haas group of time-tested paper chemicals.

Tamol is a trade-mark, Reg. U.S. Pat. Off

ROHM & HAAS COMPANY

Philadelphia 5, Penna.

G. E. Inspects Blackinton Mill

NORTH ADAMS, Mass.—General Electric Co. has inspected the idle Blackinton mill twice within the past month, with a view to possibly acquiring the plant for some of the GE's plastics division operations.

This has been revealed by Dr. Zay Jeffries of the General Electric Plastics Division at Pittsfield, a vice-president of the company, who on June 10 confirmed rumors heard here earlier.

Dr. Jeffries pointed out that with the need for more space, the realty corporation inspects all idle industrial buildings as a matter of course, and that the Blackinton Mill was one of the several visited in the past few months.

K-C Long Lac Project Ahead of Schedule

NEENAH, Wis. — Kimberly-Clark Corp. is a month or more ahead of schedule on its LongLac project, scheduled to start production January 1, 1949, B. F. Smith, division engineer in the pulp department, told the Neenah Kiwanis club June 16 at the Valley Inn. Mr. Smith screened colored motion pictures of the project, which is on the north shore of Lake Superior and which is being rushed to completion to increase the corporation's pulp supply. Don Porter will be the mill manager when it begins production.

Hapson and McLaughlin In Controllers' Posts

NEW YORK — Nelson T. Hampson, controller of the Lowe Paper Co., Ridgefield, N. J., was named treasurer of the New York City Control of the Controllers' Institute of America on June 17. At the same meeting, Stuart W. McLaughlin, assistant controller of the West Virginia Pulp & Paper Co., New York City, was named secretary of the group.

Champion Entertains Chemists

HAMILTON, Ohio—The local division of the Champion Paper & Fibre Co., was host to members of the American Chemical Society, Cincinnati and Dayton sections, on June 11. The chemists, who attended a joint meeting at Miami University, Oxford, Ohio, made a side-trip here and were shown through the mill and the new control laboratory.

Race Horses are not PACK MULES!

The drier rolls are the race horses of any paper or board machine. The lighter you load them the better they perform. Don't make pack mules of them.

From the thinnest tissue to the heaviest board, there is a Hamilton Felt that will lighten the load for your race horses.

The press rolls are the pack mules, designed and built for heavy work. Equip them with Hamilton Felts. Watch them SQUEEZE out the water before the sheets arrive at the driers. From there on to the winders it will be easy going for your racers.

SHULER & BENNINGHOFEN, HAMILTON, OHIO

• Miami Woolen Mills •

Hamilton Felts

• Established 1858 ○

Herrlinger Heads P & T A

(Continued from page 13)

members permitted last year, 25 had been elected. The 500-100 limitation was continued.

Secretary Richey further reported that the board of directors had voted on June 10 to continue the $1,200 contribution to the scholarship fund of the Institute of Paper Chemistry for 1949 and to continue the student award of $150 for 1949. The board further went on record as extending cooperation to the NPTA and the gumming industry in their public relations programs.

A Fall luncheon on October 29 at Hotel Stevens, Chicago, to be held jointly with the Salesmen's Ass'n., of The Paper Industry during the Fall NPTA convention, was authorized by the board. Steering the luncheon is the following committee:

E. J. Durkin of the Paper & Twine Ass'n., chairman; Ben Babbitt of the salesmen's association (Western division); and Mr. Knox.

An amateur show, by The Paper & Twine Art Players, "A Mid-Summer Night's Scream," or "John Richey's Bucking Nightmare," presented the night of June 11, was a huge success. Participating in it were:

Glen D. McDonald, John Schneider, Ed Wesselman, Lee Mitchell, Herschel Weinberg, Jack Sterling, John Misner and Mr. and Mrs. Joseph F. Teti.

J. C. Wittrock, N. T. Beardsley, John Shartle, Jim Blottman, E. P. Magel, Eddie Jacobs, M. D. Schwartz, A. J. Ulrich, Robt. J. Lantry, W. G. Huit, C. V. Jewell.

E. J. Durkin, Leo S. Altholz, Robt. W. South, Hersch Justus, Bob Knox, Chet Adams, Chas. Elliott, Jr.

Appreciation of the Association membership was extended to Edgar A. Hall of Cincinnati for his able efforts in staging the show, and a similar tribute was paid to Joseph Druth, chairman of the golf committee for his work in handling the golf and recreational parts of the program.

Attendance ran well in excess of 300 persons and was reported as the largest in the Association's history.

Applications for membership in the Association were received from W. L. Hogue, Minerva Wax Paper Co., Minerva, Ohio; H. H. Thoet, Thoet Corp., New York; A. A. Atcheson, Southern Kraft Division, International Paper Co., Milwaukee; Alex H. Krone, Royal Lace Paper Co., Chicago, and Carl I. Spade, Weston Paper & Mfg. Co., Dayton, Ohio.

Scott Raises Prices

PHILADELPHIA—Scott Paper Co., on June 14 increased prices of some of its brands by an average of nearly five percent, bringing selling prices to about 46 percent above the level at the close of 1941.

"Recent increases in the cost of freight, raw materials and supplies prompted the increase," the company said. "We have continued to adhere to the principle that our prices should be adjusted only to the extent necessary to maintain quality and provide reasonable earnings. Accordingly, the price-advance was limited to the extent required by operation of inflationary forces beyond our control."

Daughters Perry's Heirs

SPRINGFIELD, Mass. — In a will filed for probate in Probate Court here June 11, Walter E. Perry, late paper mill executive and former member of the Springfield Police Commission, divided his estate equally between his two daughters—Beatrice M. Perry and M. Alice Perry. They were the only heirs-at-law listed.

M. Alice Perry was named executrix of the will and it was left to her discretion whether to sell any stock of the Plymouth Paper Co., Inc., owned by the testator at the time of his death. The will also gave her authority to sell any real property in the estate at her discretion.

The will was dated May 15, 1946.

Hasterlik Joins Sergeant

NEW YORK—Robert M. Hasterlik has been added to the sales staff of the E. M. Sergeant Pulp & Chemical Co. Previously he was with the Prior Chemical Corp., and General Chemical Co.

FOR SALE

NEW 10′ D. x 30′ L. U BAR BARKING DRUM

Ready for shipment in 30 days

FIBRE MAKING PROCESSES, INC.

Chicago 11, Illinois

Get it from CRANE . . .
for quality in every piping item

It's as simple as that! *Everything* from Crane is the easy way to specify "Quality" in all piping equipment. Whether it's valves, fittings, accessories or fabricated piping . . . one catalog and one order quickly bring everything you need from your nearest Crane Branch.

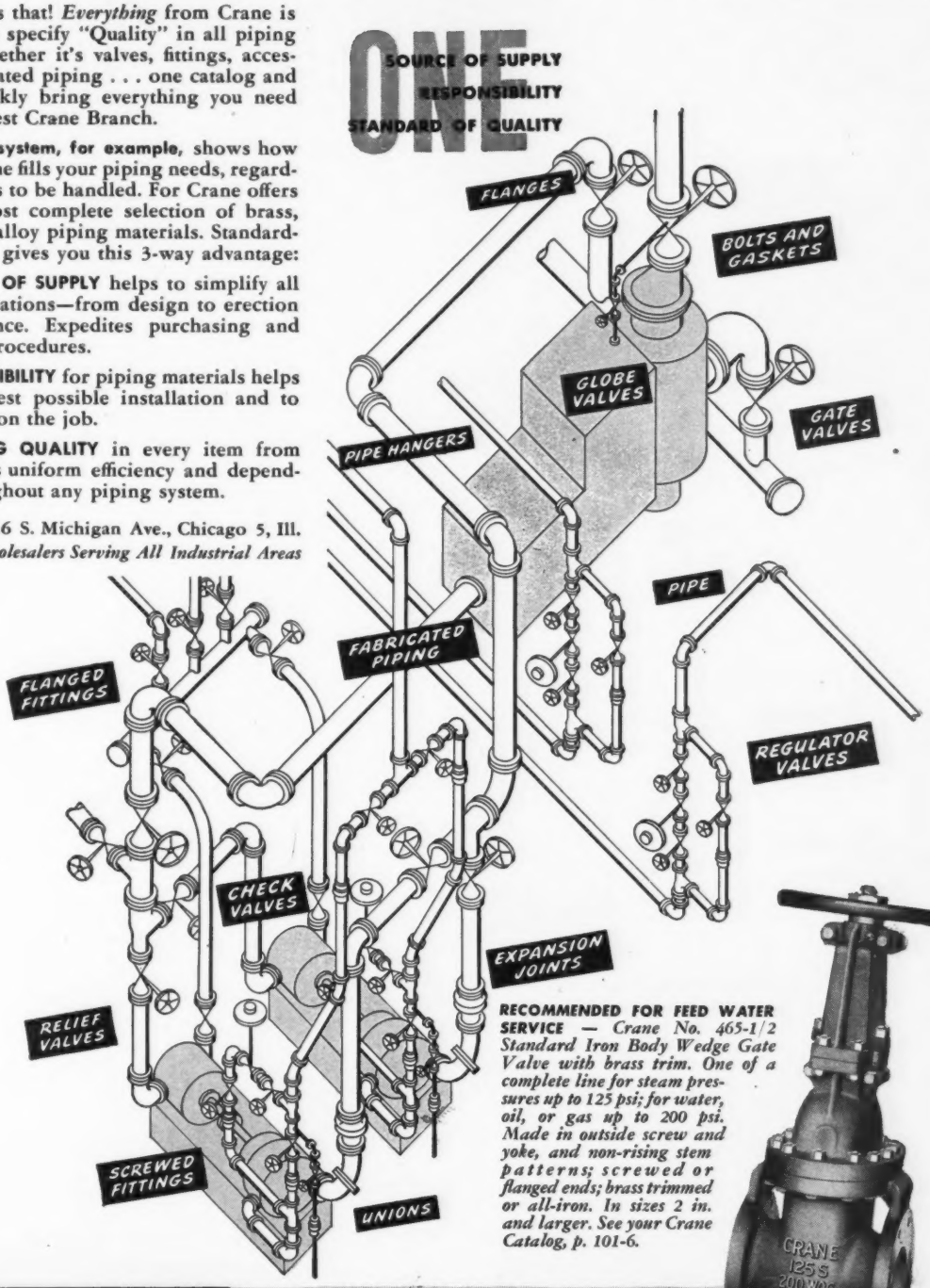
This boiler feed system, for example, shows how completely Crane fills your piping needs, regardless of the fluids to be handled. For Crane offers the world's most complete selection of brass, iron, steel and alloy piping materials. Standardizing on Crane gives you this 3-way advantage:

ONE SOURCE OF SUPPLY helps to simplify all piping installations—from design to erection to maintenance. Expedites purchasing and store-room procedures.

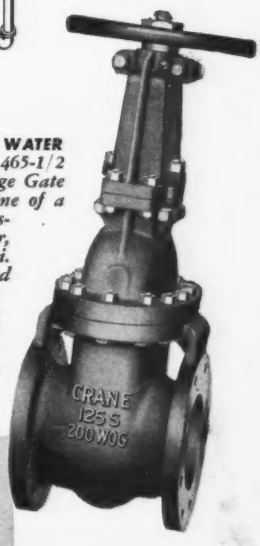
ONE RESPONSIBILITY for piping materials helps to get the best possible installation and to avoid delays on the job.

OUTSTANDING QUALITY in every item from Crane assures uniform efficiency and dependability throughout any piping system.

CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving All Industrial Areas



RECOMMENDED FOR FEED WATER SERVICE — *Crane No. 465-1/2 Standard Iron Body Wedge Gate Valve with brass trim. One of a complete line for steam pressures up to 125 psi; for water, oil, or gas up to 200 psi. Made in outside screw and yoke, and non-rising stem patterns; screwed or flanged ends; brass trimmed or all-iron. In sizes 2 in. and larger. See your Crane Catalog, p. 101-6.*



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VALVES • FITTINGS
PIPE • PLUMBING
AND HEATING

CRANE

FOR EVERY PIPING SYSTEM

OBITUARY

Robert S. Newbold

Robert S. Newbold, 62, president of the General Coated Products Co., of Paterson, N. J., died on June 17 in New Rochelle Hospital, New Rochelle, N. Y.

Before becoming president of that company Mr. Newbold had been president of General Felt Products, Inc. a Brooklyn concern he founded and was a former vice-chairman of the board of the Standard Cap & Seal Co., in New York City.

Surviving are his widow, Mrs. Gertrude Simms Newbold; a son, Dr. Robson Newbold, a medical missionary in the Belgian Congo; two daughters, Mrs. William A. Green Jr. and Mrs. Emmet Tone; three brothers, John, Philip and the Rev. Dudley Newbold, and a sister, Mrs. Ellsworth Carpenter.

Ira Little

Ira Little, 63, engineer for the Pequannock Valley Paper Co., Butler, N. J., for the past 28 years, died in Franklin Hospital on June 18, after a day's illness. Services were held at Mr. Little's home in Newfoundland, N. J., on June 23, with interment in North Church Cemetery, Franklin, N.J.

Surviving Mr. Little are his widow, Mrs. Stella Card Little, four daughters and four sisters.

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1948		Corresponding Weeks—1947	
May 8	102.4	May 10	107.9
May 15	100.4	May 17	105.3
May 22	100.3	May 24	105.1
May 29	98.9	May 31	105.6
June 5 (revised)	92.9	June 7	106.7
June 12	95.0	June 14	107.2

COMPARATIVE MONTHLY SUMMARIES

1947						1948	
Jan.	102.1	May	106.2	Oct.	109.5		
Feb.	105.9	June	106.0	Nov.	109.3	Jan.	100.9
Mar.	106.1	July	93.5	Dec.	101.5	Feb.	100.3
Apr.	105.1	Aug.	104.2			Mar.	100.6
		Sept.	102.0	Avg.	104.3	Apr.	102.5
						May	*100.4*

COMPARATIVE YEARLY SUMMARIES

	1941	1942	1943	1944	1945	1946	1947	1948
Year to Date	93.1	99.7	88.8	88.6	88.9	100.2	105.5	*100.1*
Year Average	97.4	90.4	87.8	88.1	89.4	101.1	104.3	

NOTE: As of January 10 capacity base increased by 13.3%.

PAPERBOARD OPERATING RATIOS†

Current Weeks—1948		Corresponding Weeks—1947	
May 8	101	May 10	101
May 15	100	May 17	102
May 22	100	May 24	101
May 29	100	May 31	98
June 5	87	June 7	98
June 12	101	June 14	103

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1947	99	103	101	100	101	101	90	99	96	101	99	89	98
1948	99	100	102	102	*100*								

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Lyddon and Company (America) Inc.

•

Exporters of wood pulp to all the world

Parsons and Whittemore, Inc.

World-Wide Paper Exporters

•

Wood Pulp

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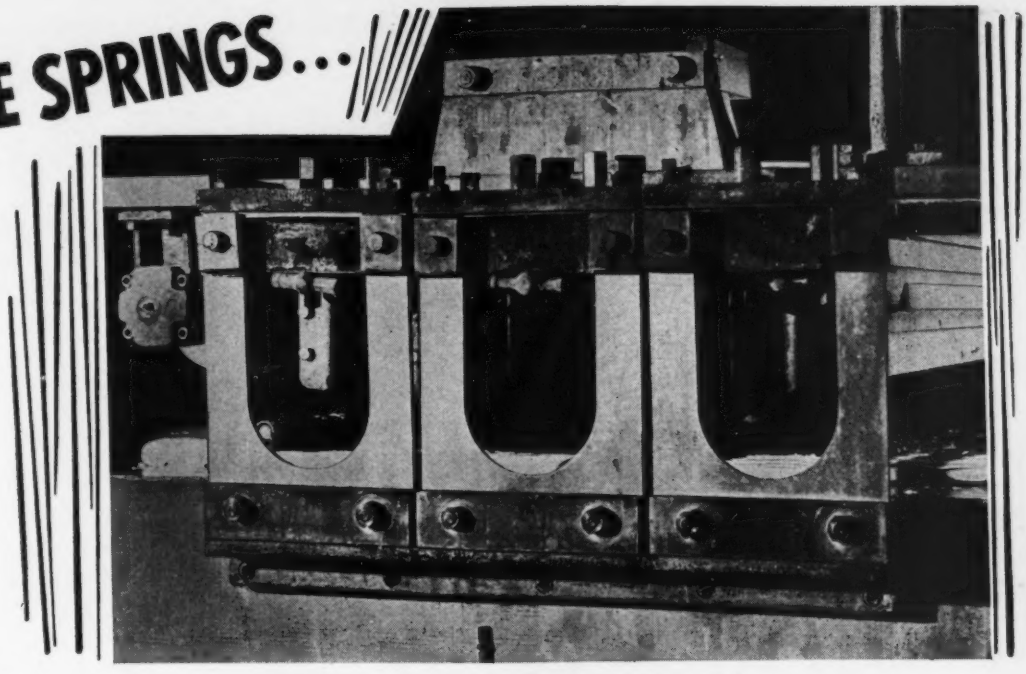
SHAKE SPRINGS...



How long do you figure they ought to last?

Look over these new springs, built of "Z" Nickel by Rice Barton Corporation, Worcester, Mass. Before you make your estimate read the facts below:

You know that suction box shake and support springs have to take a lot of punishment. No need to tell you that these springs must resist corrosion and possess high mechanical strength.

Now look again at the installation above. The springs are assembled in leaf fashion from sheets 1/16" thick. They are full heat-treated "Z"* Nickel, with hardness of 38-40 Rockwell C and tensile strength close to 200,000 psi.

You surely know that Nickel provides high resistance to corrosion and absolute freedom from rust and from moisture absorption.

These "Z" Nickel shake springs are standard on many Rice-Barton fourdriniers. And how long are those springs likely to last? Maybe you can judge from this fact:

"Z" Nickel shake springs of similar design have been in continuous service on one high speed machine since 1939. That's going on ten years. Ten years without failure due to rust, corrosion or spring fatigue. How many more years do you figure they will continue in service?

Want detailed engineering facts on the complete range of "Z" Nickel mechanical properties? Write, please, to

*Reg. U. S. Pat. Off.

EMBLEM OF SERVICE INCO

THE INTERNATIONAL NICKEL COMPANY, INC. • 67 Wall Street, New York 5, N.Y.

"Contract Unique"

Late in 1945, the Downingtown Mfg. Co., Downingtown, Pa., and the United States Gypsum Co., entered into an agreement from which all concerned are reported to have benefited greatly. To commemorate the agreement and the developments which resulted from it, Downingtown has published a limited edition of a handsomely executed book entitled "Contract Unique."

The book provides a permanent record of the general terms of the agreement. It describes and pictures the mill at South Gate, Calif., which Downingtown equipped under the terms of the agreement and also contains a drawing of the machine it supplied for United States Gypsum Co's., Clark, N. J. mill.

"Contract Unique" was planned, written and designed by Eugene A. Holland, Philadelphia industrial and technical advertising specialist, who has been handling the Downingtown advertising for more than 20 years.

Excerpts from the book follow. From the flyleaf comes the following quotation:

"In appreciation of the friendly cooperation given us, which made this gigantic undertaking a real pleasure, we of the Downingtown Mfg. Co. dedicate this book to those of the United States Gypsum Co., with whom we associated, and to our sub-contractors, who helped us keep our promises."

The sub-contractors are listed at the back of the book.

The next page reads:

"On November 29, 1945, the Downingtown Mfg. Co. signed a contract with the United States Gypsum Co. For over a year, the United States Gypsum Co. had analyzed its requirements for paper and felt, together with various designs and locations of mills and as a result of this study, they decided to install combination mills in California and New Jersey.

"We would design and build two high capacity, combination felt and liner board machines and furnish all of the stock preparation equipment for the two complete mills. They would be responsible for the power plant, buildings and accessories.

"This was 'Contract Unique' in the paper industry because of its size . . . and because of its scope . . . complete manufacturing equipment from raw material to finished product in two mills. It was 'Contract Unique' in responsibility.

"We and our sub-contractors delivered this equipment on schedule, despite the harassing strikes in steel, coal, copper and numerous other industries, under the able leadership of our former president, Edward T. Street."

This page bears the signature of Enright A. Ellis, Downingtown president. Following it is a page summarizing major units of machinery in the contract, including: four waste paper conveyors, four Hydrapulpers, seven Classifiners, 16 Jordans, four Hydrafiners, 28 screens (Packer), 18 Nofome mix boxes, two combination felt and liner board machines including 18 vats and hoppers, 16 suction rolls, 215 dryers, four calender stacks, 121 pumps, and 390 electric motors (14,343 HP).

The next page reads:

"'Contract Unique' is appropriately distinguished by Machines Unique. Each is by far the world's largest combination felt and liner board machine, one having ten vats and 124 dryers and the other eight vats and 91 dryers.

"And even as cylinder board machines alone, disregarding the felt vats, the one machine with nine board vats is the largest and the other with seven board vats is among the big in cylinder machines today. Both machines trim 155 inches, which is among the widest of sheets made on any cylinder board machine. They produce roofing felt, and liner for gypsum board, which is recognized as one of the most difficult sheets to make on a cylinder machine.

"The overall length of the ten vat machine is 435 feet, which is approximately the height of a 35 to 40 story skyscraper. The eight-vat machine is 361 feet long.

"Photographs in this book were taken at the South Gate, Calif., mill of the United States Gypsum Co., while the drawing herein is of the Clark (N. J.) Machine."

CUT DOWN HEAD BOX DILUTION

Close-up of Installation on Head Box Wall

NEW BROUGHTON HEAD BOX SHOWER

PAYS FOR ITSELF IN WATER SAVINGS

Performs efficiently with only a small volume of water. This latest development in low volume, high pressure showers does double duty. It *keeps* head box sides and ends washed down and also acts as a foam killer.

Just one set of spray nozzles rotating in an arc, varying as required, does the job. Results have been especially successful on kraft machines and highly sized stocks.

Write for detailed prints showing ease of installation.

A. E. BROUGHTON & COMPANY

GLENS FALLS, N. Y.

Midwest Representatives, RONNINGEN ENGINEERING SALES, Vicksburg, Mich.
Canadian Representatives, SHERBROOKE MACHINERIES LTD., Sherbrooke, Quebec.
Mfd. and Sold in Europe by INGENIORSFIRMAN FLIESBERG AKTIEBOLAG, Stockholm 7, Sweden.

Also manufacturers of Broughton Unit Vacuum Control Systems for Flat Boxes, and Hydraulically Oscillated Showers for cleaning Cylindrical Screens, Cylinder Moulds, Felts, Fourdriniers, etc.

NEW LITERATURE

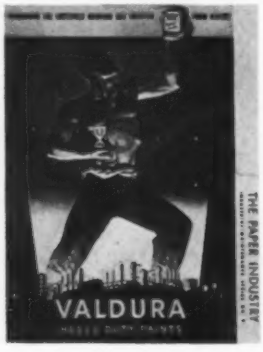
Frederick Iron & Steel Co., Frederick, Md., has published an illustrated bulletin (No. MP-1-1) on Frederick Motor Pump Units, and Bulletin VS-140, Frederick Vertical Stock Pumps. Enclosed in the same binder is an eight-page bulletin entitled "For Pulp and Paper Mills — Stock Pumps by Frederick."

The Hardinge Co., Inc., 240 Arch Street, York, Pa., has published Bulletin No. 46, "Automatic Backwash Rapid Sand Filter." It illustrates water supply, paper mill and sewage and industrial waste applications. Also shows auxiliary equipment.

Sound Paint Applications In the Paper Mill

Paint applications in the paper mill are covered comprehensively in "The Paper Industry — Maintenance Series No. 9," a handy booklet of charts which will be sent to paper mill executives free of charge upon request to the American-Marietta Co., 43 East Ohio Street, Chicago, Ill.

Graphic charts and tables show at a glance the primers and finish coats of paints recommended for some 50 applications in mechanical or groundwood process mills, soda process No. 1, soda process No. 2 precipitators, sulphite process, sulphate process No. 1, sulphate process No. 2 precipitators,



and pulpwood woods and yards division.

Considering a number of influencing factors, the American-Marietta chart carefully plots for each use not only the primers and finish coats it also lists the characteristics of each product recommended — together with the best type of thinner for one-coat work, two-coat work, and spray application.

Conditions peculiar to paper mills, such as resistance to caustics, acids, heat, moisture, steam and abrasion are carefully considered, so that aside from providing decorative surfaces, the finished job prevents corrosion or deterioration, is easy to clean, durable, and possesses good light-reflecting characteristics to realize maximum efficiency of the existing lighting system. The material was compiled with the assistance of plant superintendents, maintenance engineers and painting foremen.

3,000 N. H. Workers Switch to AFL

BERLIN, N. H.—Some three thousand New Hampshire pulp and paper workers have walked out on John L. Lewis, it was announced June 11.

By a vote of 2,055 to 298, paper workers at the Brown Co., Berlin, switched allegiance from the United Mine Workers Union to the AFL.

The switch has been in the air for some time. Several months ago, Philip Smyth, head of the Berlin local, went over to the AFL as an organizer. At that time, Mr. Smyth accused Mr. Lewis of "tyrannizing" the union and depriving employes of their voting power by "hand-picking" a district president.

NELIO

is free from the defects of ordinary gum rosin!

NELIO Gum Rosin offers distinct advantages for the manufacture of size. It is made by scientific methods, under strict laboratory control.

NELIO offers economies In addition to its exceptional uniformity and dependability, NELIO is less expensive to handle and use.

UNIFORM
The standard grades are unvarying in color and quality. Shipment after shipment will be identical.

BRILLIANT
Assuring consistently lighter grades of paper.

DRY
No need to worry about the turpentine content of NELIO —it's very low!

CLEAN
Not a trace of dirt or foreign matter because of careful processing in stainless steel equipment.

FULL-WEIGHT
Shipped in standard, non-absorbent leak-proof metal drums, in 100 lb. net weight paper bags or in fluid state in insulated tank cars.

IF YOU NEED TECHNICAL SERVICE—We offer you a consulting service with experienced paper technicians on request.

Write for Samples and Prices

NELIO is manufactured by THE GLIDDEN COMPANY, NAVAL STORES DIVISION and sold by

E. W. COLLEDGE

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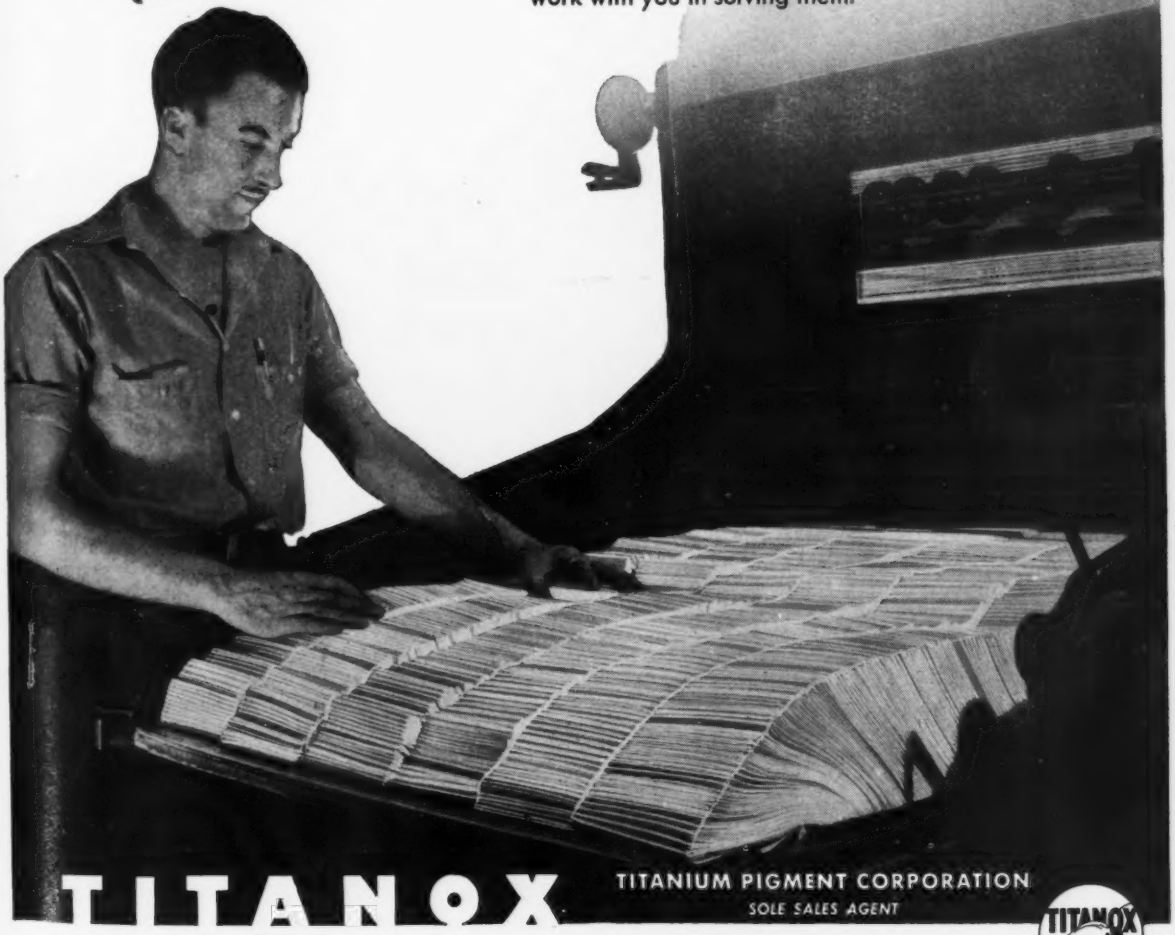
TITANOX . . . *the brightest name in titanium pigments*

Your paper is MORE OPAQUE, WHITER and BRIGHTER WITH TITANOX PIGMENTS

*M*anufacturers of all types of white, bright and opaque paper always find that TITANOX pigments generously contribute these qualities to their stock.

Printers prefer paper made with these famous TITANOX pigments. You, in turn, can be sure of a product that looks better . . . prints better . . . *sells* better when you use the TITANOX line.

While the supply of TITANOX, unfortunately, is limited, we can still be of help on any pigmentation problems you may have. Our Technical Service Laboratory — reached through our nearest office — will be glad to work with you in solving them.



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TITANIUM PIGMENT CORPORATION
SOLE SALES AGENT

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111 Broadway, New York 6, N. Y.
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6216

Producers of

SULPHUR

Large stocks at our mines make possible prompt shipments

Uniformly high purity of 99½% or better

Free of arsenic, selenium and tellurium

TEXAS GULF SULPHUR CO. INC.

75 East 45th St. New York 17, N. Y.

Mines: Newgulf and Moss Bluff, Texas

Southern Paper Board Co. Forwards First Shipment

SAVANNAH, Ga.—Southern Paperboard Corp. sent out its first shipment of liner board from its new $15,000,000 pulp mill at Port Wentworth, Ga., on June 14. The shipment of aproximately 200 tons of liner board, used in making containers, was sent to plants of the Robert Gair Co., Inc., in various cities throughout the country.

Ernest Rossiter. president of the local company, said approximately 250 tons of liner board are being produced daily, with the plant operating at one-half capacity. He added that the plant would be in full operation within a few months. First test run was made late in May. Permanent employment will be 430 persons, it was estimated. The mill, on a 160-acre tract, will process hardwood and pine into paper products.

Champion Buys Orange County, Tex., Tracts

BEAUMONT, Tex.—Twenty-one tracts of land in Orange County have been purchased by the Champion Paper & Fibre Co. from the Miller-Vidor Co., and the company has filed an intent to execute another deed on 25 tracts of land in Jasper County, preparatory to beginning sizable operations in Southeast Texas.

Cost of the Orange County purchase was given as about $51,000.

The company has leased several thousand acres in Jasper County in the Evadale area, and has purchased land on the Neches River near Evadale for the erection of a paper mill.

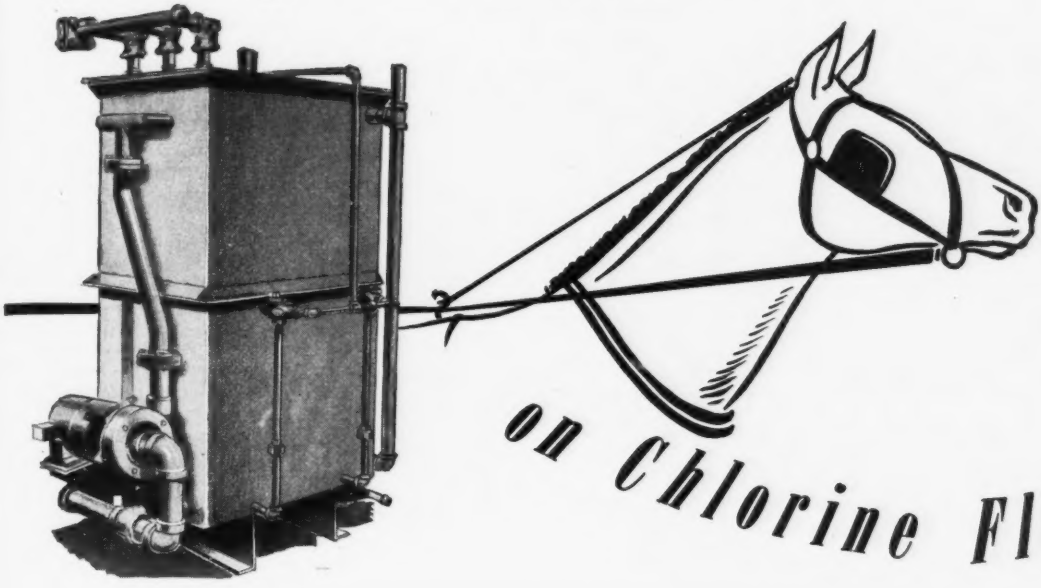
Libby Pursuing Hardwood Pulping Research In South

SYRACUSE, N. Y. — Professor Clarence E. Libby, head of the Pulp and Paper Department of New York State College of Forestry, Syracuse University, left on June 21 to visit a number of paper and pulp mills in Virginia and North Carolina in connection with the hardwood pulping research project of the College. Professor Libby will take as much time as is necessary to thoroughly study the requirements of these mills as well as the progress they have made in the use of hardwood for the manufacture of paper pulp.

Crown-Willamette's Ticoulat Addresses Sales Executives

NEW YORK—G. J. Ticoulat, manager of sales of the Crown-Willamette Paper Co., San Francisco, speaking at the 13th annual convention of the National Federation of Sales Executives at Hotel Waldorf Astoria, told his audience that despite a continuing sellers' market, his company had readied itself for the buyers' market ahead. Not only have sales personnel been increased and their training intensified, but new, major products are being introduced, he said.

Putting a Checkrein



on Chlorine Flow

Even as short a time ago as 1930 the methods of controlling and measuring chlorine were quite unsatisfactory. A batch of liquid chlorine was put in weigh tanks. This measured weight was then evaporated and conveyed to the point of use. To use this batch of prepared chlorine gas in a continuous bleaching process required a close control that was just unobtainable with existing equipment.

Variations in temperature and pressure caused erratic gas flow from the evaporator. With a demand of up to 2000 lbs. per hour, reducing valves of that date were inadequate. How to maintain uniform pressure and temperature therefore was a problem tackled by Hooker chemists and engineers.

This problem, in so far as it relates to temperature, was solved by the design of a chlorine evaporator that maintained a constant chlorine gas temperature. This evaporator was patterned after a boiler with the chlorine entering at the bottom through tubes which rose through a hot water bath. Water temperature was regulated by the injection of steam, whose flow was controlled by a solenoid valve and mercoid switch. The switch was actuated by the temperature of the chlorine gas leaving the evaporator.

A baffle plate freed the rising chlorine gas from drops of liquid and dry chlorine gas at uniformly held temperature was collected in a dome or chamber at the top of tubes. From this point the chlorine gas was fed through the necessary control equipment to its place of use.

By means of such improvements in the handling of chlorine, Hooker has continued its close association with the pulp and paper industry. Our purpose has been to make it easier and safer for you to use chlorine. Today, as in the past, the problems you are daily encountering are of concern to us. One basic way in which operating problems are kept at a minimum is in supplying you with uniform high quality chlorine, caustic soda and other chemicals.

When assistance is needed in handling Hooker Chemicals, call upon our Technical Service Department.

HOOKER ELECTROCHEMICAL COMPANY
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New York, New York • Wilmington, California • Tacoma, Washington

HOOKER CHEMICALS

8-47

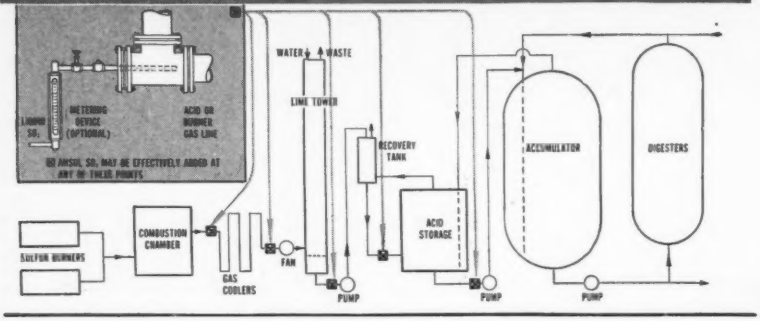
Caustic Soda · Muriatic Acid · Sodium Sulfide · Paradichlorbenzene · Sodium Sulfhydrate · Chlorine

the road to 深火* is paved with good intentions

...DON'T SHUT DOWN YOUR MILL...if you intend to repair your acid system

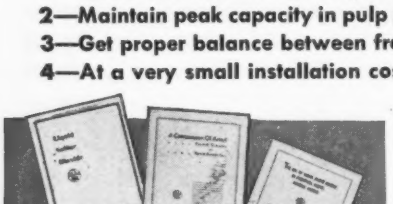
*Confucius say—"No hell in Chinese language"

Use ANSUL SO_2 and maintain maximum production!



If you must repair or replace your sulphur burner, combustion chamber or gas coolers, use ANSUL liquid SO_2 and keep your mill operating at capacity.

1—Avoid interruption of acid plant operation.
2—Maintain peak capacity in pulp plant during repairs of acid system.
3—Get proper balance between free and combined SO_2.
4—At a very small installation cost.



Send for complete information. You will learn also how to use Ansul Liquid SO_2 to fortify your cooking acid during the Summer months, and for green wood cooks . . . to improve your digester schedules, obtain more complete pulping and better screening of pulp.

Ansul liquid SO_2 may be added simultaneously at one or more points in the system (see diagram).

• • •

Prepare for an emergency. Consult the Ansul Technical Staff *NOW*. Learn how easy and economical it is to avoid shutdown headaches.

LIQUID Sulfur Dioxide by ANSUL

ANSUL CHEMICAL COMPANY
INDUSTRIAL CHEMICALS DIVISION, MARINETTE, WIS.
60 E. 42nd St., New York — 535 Chestnut St., Philadelphia

Kipnis Contributes To Hospital Fund

JACKSONVILLE, Fla. — Jerome L. (Jerry) Kipnis, vice-president of the National Container Corp., on June 16 presented Dr. Frank L. Fort, general chairman of the Baptist Hospital of Jacksonville, Inc., building fund drive, with a check for $5,000, the first installment of a $15,000 contribution to further the construction of the 200-bed facility.

Semi-Chemical Pulp Unit In Tomahawk Plans

TOMAHAWK, Wis. — National Container Corp. has completed its plans for a one-story addition to its affiliated firm, the Tomahawk Kraft Paper Co. The addition will be equipped as a semi-chemical pulp unit for processing operations. Extensive equipment, including a new boiler and accessories, is included in the project.

OTS Offers Free Paper Bibliography

A seven-page bibliography of paper dated February 1947 is reported as being available, free of charge, by the Office of Technical Services, Washington 25, D. C.

Letters

Dear Mr. Heitzeberg:

I have always been a bit disturbed about the failure of finacial writers and economists to give "Paper" the position it deserves in the connomic set-up of the North American continent. While it occupies either the sixth or seventh place in our national economy, no one seems to pay much attention to it, except in some occasional study or general interest article.

A god pitcher with the Cincinnati Reds, or some other team, gets infiinitely more attention from sports writers and statisticians, and they are only writing about some guy who one day "has his seat on the throne" and the next day may be "thrown on his seat."

One of the presidents of one of the great leading industries of this country recognizes "Paper" and its importance to his business and the national economy.

I am enclosing the May 1948 issue of Westinghouse Stockholders' Quarterly. You will note that Mr. Gwilym A. Price, President, Westinghouse Electric Corporation, has used as his "lead," an article dealing with the application of Westinghouse motors and appliances in the manufacture of "Paper." He was undoubtedly limited by space in this publication as he could have extended it to his products useful in the conversion of "Paper" into many products, also the adaption of Westinghouse products to all sorts of printing, carton making and automatic packaging machinery.

I just wanted you to know that one of our great industrialists does recognize the importance and stability of the paper industry. Westinghouse doesn't bother with a product development program which has no long time future application!

D. C. EVEREST
President and General Manager
Marathon Corporation
Rothschild, Wis.

If you want MORE LIFE from your tubing applications . . .

put it up to headquarters!

• Paper mill engineers have found an easy way to get longer service out of tubing. Simply by following the advice of our tubing specialists they have been able to double or even triple the life of their evaporator, condenser and heat exchanger tubing, and similar services. All that was needed was a change-over to a grade of steel more suitable to the conditions of the job.

There are two reasons why we at Tubing Headquarters can definitely help you to obtain better results from tubing applications – why it will pay you to put your tubing problems in our hands.

First, because NATIONAL Tube Company makes seamless steel tubing in the widest range of size and wall thickness and in a complete range of steel grades –from low carbon to the finest alloy and stainless steel–able to take care of practically any paper mill requirement. And, second, because we never lose sight of the fact that every installation is an individual problem in material selection and must be treated as such.

As a result our recommendations are based solely on the particular requirements your service involves. In other words, we fit the tubing to the job, not the job to the tubing.

If you want that kind of approach to your tubing problems, bring them to us.

NATIONAL TUBE COMPANY, PITTSBURGH, PA.
(TUBING SPECIALTIES DIVISION)

COLUMBIA STEEL COMPANY, SAN FRANCISCO
PACIFIC COAST DISTRIBUTORS

UNITED STATES STEEL EXPORT COMPANY, NEW YORK

WHICH TO USE? Low Carbon Steel may be most economical for many applications, but wherever corrosion is a problem one of the various alloy steel or stainless steel tubes may pay handsome dividends in longer life and lower maintenance. Let us help you make the proper choice.

SEAMLESS means "Walls Without Welds"—pierced from solid steel of the finest quality. NATIONAL tubes made by this process have absolutely uniform wall strength – no longitudinal line of potential weakness.

NATIONAL WALLS WITHOUT WELDS Seamless

PIPE AND TUBES

USS

UNITED STATES STEEL

Paper Executives Acclaim 75th Anniversary Number

The 75th Anniversary Number of *Paper Trade Journal* published early in June by the Lockwood Trade Journal Co., is evoking widespread favorable comment among paper mill executives, educators, government officials, and others.

Typical of the comments coming to the publisher are the following letters selected at random from among many:

June 3, 1948

Gentlemen:

Will you please send me a copy of the Seventy-fifth Anniversary issue of the PAPER TRADE JOURNAL, invoicing me at the above address.

The Anniversary Issue of the PAPER TRADE JOURNAL is a monumental tribute to our industry and I am sure that we are only one of the many mills who are happy to pay tribute to the entire staff of the PAPER TRADE JOURNAL for this outstanding publishing achievement. You have earned our admiration and sincere appreciation.

We particularly want to express our appreciation for the fine, intelligent use of the illustrations and historical material on the Byron Weston Company. We are proud to be so prominently identified with this edition, and the copy which I have requested in this letter is for my personal library.

Sincerely and cordially yours,
Harry Birt
Sales Manager
Bryon Weston Company
Dalton, Mass.

June 8, 1948

Dear Art:

Immediately upon receipt of your 75th Anniversary Number, I hastily scanned the same and had the pleasure of telling you on the telephone how well I thought of the issue. After a more careful reading, I believe that it is an outstanding contribution to the literature of the Pulp and Paper Industry. It is obviously the result of great painstaking work and research. You and your associates are to be highly congratulated on doing such a fine job.

With kindest regards, I am

Cordially yours,
A. J. Sigel
Vice-President
Gottesman & Company, Inc.
New York City

June 8, 1948

Gentlemen:

We have received a copy of the Anniversary Edition of your "PAPER TRADE JOURNAL" with its review of "The Progress of Paper."

You can be assured that this edition is being examined with a great deal of interest by the members of our Staff at Fort Edward.

May we have another copy of this edition for the use of our General Manager?

If there is a charge for this additional copy, we would be glad to pay for it upon receipt of your bill.

Very truly yours,
C. F. Kalmbach
Purchasing Agent
Marinette Paper Co., Inc.
Fort Edward, N. Y.

June 11, 1948

Dear Mr. Lockwood:

This is perhaps an unusual letter, or at least its the first time I have ever had occasion to write to a publisher and express regret that we had not accepted your contract for at least a full-page in your 75th Anniversary Number of PAPER TRADE JOURNAL. The very least we can do at this point is to express our sincere congratulations for what is a superior publication.

This Anniversary issue is easily the finest thing of its kind that I have ever seen, and I have wished for the past month that we had been among your other advertisers.

At this late date I do hope you may be in a position to send and bill us for five (5) extra copies. They would be welcome and valuable additions to the office libraries of many more officials within our Company.

Very sincerely yours,
Monroe W. Gill
Advertising Manager
Eastern Corporation
Bangor, Maine

June 3, 1948

Dear Mr. Lockwood,

The PAPER TRADE JOURNAL Seventy-fifth Anniversary issue appears to be an outstanding accomplishment in its field.

While I have not had time as yet to do more than look through its fascinating illustrations—they alone are enough to merit high praise.

I had the pleasure of meeting the Editor, Mr. Thompson, while he was working on the illustrations at the Dard Hunter Paper Museum, and feel he has done a fine job. It should stimulate an interest in the history of the paper industry as well as to bring this marvelous Museum into the view of those who are unable to visit it.

Do accept my congratulations on your ambitious contribution to the history of papermaking.

Sincerely yours,
Wm. B. Wheelwright
Cambridge 38, Mass.

June 12, 1948

Gentlemen:

You recently put out a special issue of the PAPER TRADE JOURNAL giving the history of paper making and I am under the impression that this is going to be available in a cloth-bound cover as well as a regular cover. Will you please send us two of the cloth-bound editions and one of the regular, marking these for the attention of the writer and sending your invoice to me.

We hope that you will be able to send these promptly but if not we would like to have them as soon as they are available.

This particular issue seemed to be prepared in a very excellent manner and you are to be complimented.

Yours very truly,
C. A. Polansky
Nekoosa-Edwards Paper Co.
Port Edward, Wis.

June 3, 1948

Gentlemen:

We would appreciate receiving, if possible, two additional copies of your 75th Anniversary issue.

We just recently received our regular issue but we have so many requests from schools, etc. for complete history on paper making and thought if we had two more copies in our library, we could loan them out when these requests are made.

Please send them to this office—244 California St., San Francisco and enclose the bill and we will make payment from this office.

Thanking you for your prompt attention, we are

Yours very truly,
R. A. Gates
Everett Pulp & Paper Co.
Everett, Wash.

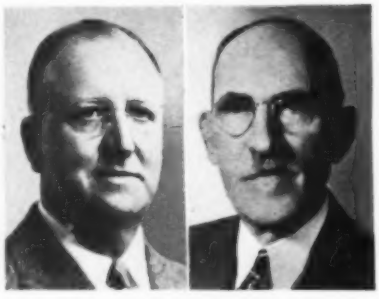
June 12, 1948

Gentlemen:

We want to compliment you on the very handsome Anniversary volume just received.

It is important to us that we receive two additional copies if they are available, and will be glad to pay whatever the charge may be.

Yours very truly,
Russell S. Madden
President
Valley Paper Co.
Holyoke, Mass.



A. F. ANJESKY
and
E. J. G. PHILLIPS

The Monorail Mfr's. Ass'n., New York City, has elected E. J. G. Phillips, director of engineering for the Richards Wilcox Mfg. Co., Aurora, Ill., president and A. F. Anjesky, sales manager of the Cleveland Tramrail Division of the Cleveland Crane & Engineering Co., Wickliffe, Ohio, vice president. E. Donald Tolles was re-elected as secretary.

Pennsalt's Beaver Transferred From Wis. to Southeast

PHILADELPHIA—John W. Beaver has been named sales representative for the Special Chemicals Division of the Pennsylvania Salt Mfg. Co., in the newly-created Maryland, Washington, D. C., and Virginia district, Joseph J. Duffy, Jr., manager of sales, reports. Mr. Beaver was formerly sales representative in the Wisconsin territory. He joined Pennsalt on February 1, 1946.

National Gypsum Co. Resumes Sales Conferences

BUFFALO, N. Y.—Sales programs of the National Gypsum Co. for the rest of 1948 and the first half of 1949 were discussed by executives and managers of the company's 15 district sales offices at a conference June 10-12. The conference was the first to be held since before the war. President Melvin H. Baker welcomed the managers to Buffalo. Dean D. Crandell, vice-president in charge of dealer sales, presided.

SECURITY QUIZ
for MANAGEMENT MEN

can you answer these important questions?

How many of your employees are buying U. S. Security Bonds regularly via the Payroll Savings Plan? (35% to 50% of employees buy Security Bonds on the Payroll Savings Plan in those companies in which top management backs the Plan.)

● *How does their average holding compare with the national average?* (The national average among P.S.P. participants is $1200 per family.)

● *Why is it vital—to you, your company, and your country—that you personally get behind the Payroll Savings Plan this month?* You and your business have an important stake in wise management of the public debt. Bankers, economists, and industrialists agree that business and the public will derive maximum security from distribution of the debt as widely as possible.

Every Security Bond dollar that is built up in the Treasury is used to retire a dollar of the national debt that is potentially inflationary. Moreover, every Security Bond held by anyone means fewer dollars go to market to bid up prices on scarce goods.

● *Can't your employees buy Bonds at banks?* Banks don't provide Security Bonds on the "installment plan"—which is the way most workers prefer to obtain them. Such workers want and need Payroll Savings.

● *What direct benefits are there for your company?* In 19,000 industrial concerns operating Payroll Savings, employees are more contented. Worker production has increased, absenteeism has decreased—even accidents have been fewer!

All these benefits accrue *in addition* to extra security for the individual who gets and holds Bonds. (Every $3 invested pay $4 at maturity.)

But even a plan with all these benefits requires the sponsorship of top management for real success.

● *What do you have to do?* The Treasury has prepared a kit of material especially for you to distribute among certain key men in your company. This will be your part in the all-out campaign—starting April 15—for *America's economic security.*

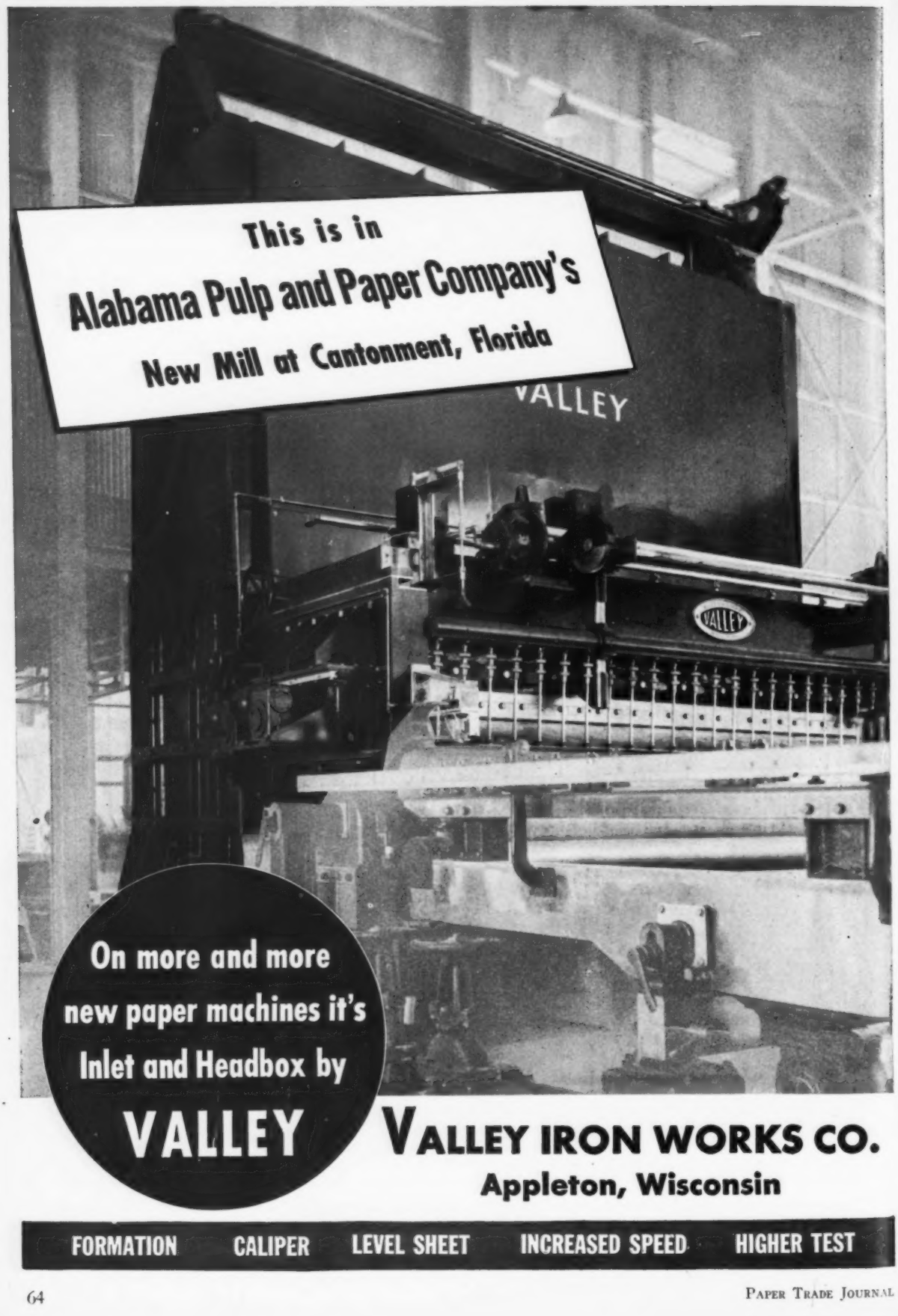
Make sure you get your kit. Be sure to give it your personal attention. Keep the Payroll Savings Plan operating at its full potential in your company. It's a major factor in America's security—*your best business security!*

For any help you want, call on your Treasury Department's State Director, Savings Bonds Division.

The Treasury Department acknowledges with appreciation the publication of this message by

PAPER TRADE JOURNAL

This is an official U. S. Treasury Advertisement prepared under auspices of the Treasury Department and the Advertising Council


This is in
Alabama Pulp and Paper Company's
New Mill at Cantonment, Florida
VALLEY
On more and more
new paper machines it's
Inlet and Headbox by
VALLEY
VALLEY IRON WORKS CO.
Appleton, Wisconsin
FORMATION
CALIPER
LEVEL SHEET
INCREASED SPEED
HIGHER TEST

A New Appraisal of the Fuel Situation*

By John Van Brunt, Vice-President, Combustion Engineering Co., Inc.

In the absence of some indication of the desired scope of the subject assigned to me, I am taking an author's privilege to confine my paper to an appraisal of the coal situation only and the relation to power generation by electric utilities and industry. Because of the rapidly increasing demand for gasoline and light oils, and other products of petroleum, and the necessity of conserving fuel oil for marine and navy use, it is thought by many that oil and gas will contribute a decreasing amount and proportion of the fuel used for power generation.

As has been stated many times, coal is our basic fuel and will, with the exception of a few plants in the Southwest, be the only fuel used for power generation.

Of the 255 billion kilowatt hours generated in 1947 by the electric utilities, about 30 per cent was generated by hydro, 16.5 per cent by oil and gas, and 53.5 per cent by coal. Seventy per cent of electric energy generated by utilities is derived from fuel.

The coal reserves of the United States were estimated by the U. S. Geological Survey at 3.2 trillion net tons in January, 1937 (1).

The Committee on Petroleum Reserves of the American Petroleum Institute (2) as of January, 1946, estimates the proven oil reserves at 20.6 billion barrels.

A joint report of the American Petroleum Institute and the American Gas Association as of December, 1947, estimated the total blocked-out reserves as 24,721,660,000 barrels of 42 U. S. gallons (3).

In 1945, James E. Pew of the Petroleum Administration for War (4) estimated the natural gas reserves to be 135 trillion cubic feet.

There is also estimated to be a potential reserve of 92 billion barrels of oil that can be recovered by the distillation of oil shale (5).

Of these estimated reserves, only those of petroleum are proven, those of natural gas are probably more nearly correct than coal reserves and may be further corrected.

In February, 1948, Andrew B. Crichton of Johnstown, Pennsylvania, at a meeting of the American Institute of Mining and Metallurgical Engineers at the Hotel Pennsylvania, New York (6) stated that "the highly industrialized East has coal to last it only 90 years" and further that the nation's coal reserves amount to only 223 billion tons, or enough for about 250 years.

If he had in mind the high-grade, low-volatile coal, he may not be so far off the real figure.

If the estimates of the Geological Survey are fantastic, as stated by Mr. Crichton, it seems probable that a more nearly correct figure will be found somewhere between

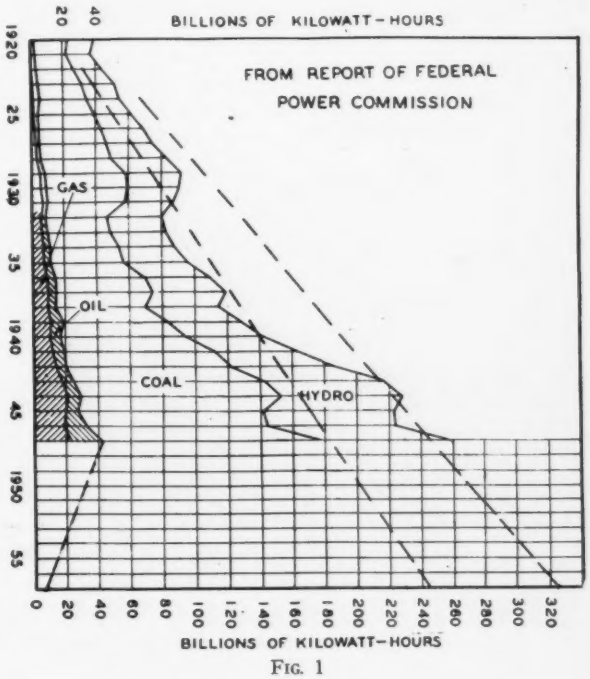


FIG. 1

those of the Survey and the possibly pessimistic figures of Mr. Crichton.

The Geological Survey figures are for coal in the ground and do not include seams of less than 14 in. for bituminous and anthracite, 2 ft. for sub-bituminous and 3 ft. for lignite.

Table 1 rearranged from Table 3 in reference (5) shows the distribution of coal by province and rank. These figures were taken from a statement by W. E. Wrather (7)* and, as will be noted, are given as of 1943 and are about 80% of the figures of the Survey reported in 1937.

Not all of the coal underground can be recovered; pillars must be left to support the roof; mining losses may total 35% of the coal brought to the surface so that the coal that will be shipped may be but 50% of the calculated reserves.

If this may be assumed to be the case, the Survey figures are immediately reduced to 1,600 billion tons. Correcting the estimates of sub-bituminous and lignite to equivalent coal of 13,000 Btu per pound, this 1,600 billion tons becomes 1,280 and 1,020 billion tons of 13,000 Btu coal.

Comparing this coal with oil and gas reserves by heating value, the ratio is as 33,100 to 830, or the oil and gas reserves are about 2.5% of the total fuel reserves.

* Read in the absence of the author by H. D. Nickle of the Combustion Engineering Co., at the New Orleans Convention of the American Pulp and Paper Mill Superintendents Association, May 20, 1948. Printed by permission of Midwest Power Conference.

1. Report of Energy Resources Committee—Government Printing Office, January, 1937.
2. Proved United States Oil Reserves.
3. *New York Herald Tribune*, March 5, 1948.
4. Natural Gas and Its Products During the War—Petroleum in War and Peace.
5. The National Fuel Reserves, a paper by A. C. Fieldner, presented at the Annual Meeting of ASME, Dec., 1946. *Mechanical Engineering*, March, 1947.
6. *New York Herald Tribune*.
7. Statement by W. E. Wrather, Director of U. S. Geological Survey—Hearings on Synthetic Liquid Fuels before Sub-Committee of the Committee on Public Lands and Surveys—U. S. Senate, 78th Congress, 1st Session, 1943, page 98.

TABLE I

	Anthracite	Bituminous	Sub-Bituminous	Lignite	Equivalent Bituminous of 13,000 Btu.
Eastern Province	15.1	585.7	.....	.....	624.1
Interior Province	.2	457.1	.....	22.9	487.5
Northern Great Plains.	.1	363.9	818.2	915.5	1447.5
Total Reserves	15.4	1406.7	818.2	938.4	2559.1

The unknown quantity in these estimates is coal. If we arbitrarily reduce the coal figures to one-half of the U. S. Geological Survey figures, or 63% of those derived from Table I, we have 640 billion tons, and the oil and gas reserves are but 5% of the total.

Using this figure and the present annual rate of coal consumption of 620 million tons, we have an estimated life of reserves of about 1,000 years.

However, if the probable annual increase in coal consumption is considered, their remaining life will be well below 1,000 years.

In Fig. 1 that portion to the left of 1947 is copied from data in the Report of the Federal Power Commission. It shows the kilowatt hours generated by hydro-coal, and oil and gas since 1920. Ten years have been added to the right hand of the chart. Projecting the total kilowatt hours generated to 1957, and assuming that the total generated by hydro will not increase, the difference between 255 billion kilowatt hours and 77 billion, the average amount generated by hydro in each of the past three years is 178 billion kilowatt hours generated by coal, oil and gas.

Taking into consideration the strong probability that by 1957 there will be little oil or gas used for steam generation, the extended chart shows that 240 billion kilowatt hours will be generated by coal. The national average coal consumption per kilowatt hour is 1.29 to 1.30. Using 1.2, the coal consumed by electric utilities in 1957 will be approximately 145 million tons.

The total bituminous coal production in 1947 was 616,685,000 tons (8.). Anthracite production up to March 6, 1948 was 50,721,308 tons (9), making a total of 667,406,308 tons.

Table II shows the distribution by use of bituminous coal and the increase over 1946 of 13.9%.

Because of the demand on gasoline, it is probable that less heating oil will be available, and that the use of anthracite for home heating in the East at least will increase.

It is difficult to estimate the increase in the use of bituminous in the next ten years. A substantial increase is certain, but not at the annual rate of 13.9% a year. at a slower rate. Export coal will not increase much, if Coal for industry should parallel the use by utilities, but any, when foreign mines reach and pass pre-war production. A reasonable estimate of uses other than utilities is that in 1957 bituminous coal will reach a production of, say, 15% to 20% above the 1947 figures, and anthracite 25%. This gives a total of 827,500,000 tons in 1957, an increase of about 24%.

This may seem low, but consideration has been given to the probability that as the backlog of industrial demand becomes satisfied there will be a definite slowing of production some time within the next few years. This condition also applies to the estimate of coal used by utilities.

It is possible that the estimate for 1957 is low.

So far, no consideration has been given to the possibility of a greatly reduced rate of crude oil production,

8. Bituminous Coal Institute, February, 1948, Report.
9. Anthracite Institute Bulletin of March 10, 1948.

TABLE II

	Coal Used in 1947, tons	Increase Over 1946, %
Electric Utilities	86,000,000	25.1
Coke By-product	94,522,000	24.2
Coke Beehive	10,142,000	41.5
Steel—Mills	10,048,000	12.3
Other Industries	126,706,000	6.8
Railroad Class I.....	109,296,000	—.8
Retail and Export.....	167,918,000	10.4
Bunker Fuel Miscellaneous.....	4,178,000	25.0
	616,685,000	+13.9

—Report of the Bituminous Coal Institute, February, 1948.

and at the same time a greatly increased demand for gasoline.

One can only guess the rate at which synthetic oil made from coal and gas will supplement diminishing crude oil production.

The present crude oil production in 1947 was 1,856 million barrels. The production of gasoline was 814,840,000 barrels, including 70,690,000 barrels of casing-head gasoline from natural gas (10).* Gasoline demand will increase steadily. Probably by 1957 there will be 12 to 16 million more cars on the road than today. Trucks, tractors, boats, small gasoline motors for many purposes will swell the demand.

It does not seem unreasonable to assume an annual increase of 5% over the next ten years, or 1,250 million barrels in 1957. In fact these figures may be conservative.

It has been estimated that 30,000 barrels of gasoline a day will require 6.3 million tons of coal a year (11). Using this rate, 1,250 million barrels will require 700 million tons. (This figure will be reduced by the amount of gasoline made from natural gas.)

Adding this to the estimate of coal for other purposes, we have 1,527 billion tons.

It is not likely that any such quantity of gasoline will be made from coal within ten or 15 years. The figures are given to show the effect of oil and gasoline demand on the future coal production.

Any increase in the annual production above 1,527 billion tons will reduce the life of reserves below 400 years.

Until the Bureau of Mines and the Geological Survey complete their proposed cooperative re-survey, the figures presented here will serve as a basis of argument and as a warning that our fuel reserves are not inexhaustible.

We have, as a people, been criminally negligent and wasteful of our natural resources and it is time we thought of husbanding them and using them at the best possible efficiency.

Among the reasons for the belief that our coal resources are already appreciably lessening is the fact that good, high-grade, low-ash coal is very definitely more difficult to get.

In the East where, in the past, industry and utilities could depend on ample quantities of 14,000 Btu coal of high ash-fusion temperature, many of these same users are now using coal of under 13,000 Btu with ash of 2,000 degrees fusion temperature.

To those concerned with the operation of power plants, the lowered quality of coal shipped during the war and since was and still is a reason for concern.

The increased demand, a shortage of labor, opening of marginal mines and strip mines all contributed to the production of coal of lowered quality, with higher ash content, and lower heating value. The better coals were naturally reserved for coke-making and other premium uses.

The question of interest to those in the electric generat-

10. Telephoned communication from A.P.I., March 12, 1948.
11. "Synthetic Liquid Fuels in the United States," paper presented by W. C. Schroeder at the ASME Annual Meeting, December, 1947.

ing and manufacturing industries is whether the quality of coal will improve, remain about as it is now, or become slowly poorer.

There are differences of opinion among those engaged in the production of coal, but there is general agreement that more mechanization will be resorted to, that new mines will be opened, and that many marginal mines will be abandoned. High labor rates force mechanization, and mechanization, while lowering the cost, increases the amount of ash in the coal brought to the surface.

Increased cleaning will be resorted to, but with few exceptions the cleaned or washed coal will not be used for power generation. In fact, it is probable that the refuse from coal washeries will, in the future, became an important part of the fuel supply of utilities.

In France, Belgium and Holland many electric utilities use much refuse, much of which runs as high as 35% ash. One property proposes to mix refuse of 40 to 45% ash with washed product to average 35% ash.

The opening of a new mine requires a large capital expenditure, and risk capital is not easily obtained. The tax policies of the government for the past 15 years been such as to discourage investment of this kind, nor has it been possible for industry to set aside from earnings sufficient funds for large and costly major improvements.

Returning to the matter of coal quality and what may be expected in the near future, we can only attempt to judge the future from what has happened in the past. Looking back over the past 50 years, I have a distinct impression that coal quality has deteriorated considerably during that period. By decades it seems that at each ten-year period what was regarded as a good coal at any one of these periods was not quite as good as ten years previously.

This slight change from decade to decade was probably not noticed because the improvements that were being made in mechanical stokers more than offset the lowering of coal quality.

Were it not for the marked lowering of quality during the war, it is doubtful if many would notice the change.

At the present time there is little improvement over wartime shipments.

Much mining equipment is worn out, new machines are not yet available, and new mines not yet in production.

Washing is increasing to be sure, but washed coal is almost entirely sold for premium use, such as domestic, coke-making, and the like.

It is probable that the next two or three years will show an improvement, perhaps somewhat spotty, but on the whole averaging a little better.

What will happen after that is not clear—pressure for increased production and for lower prices may tend to lower quality, but the biggest factor will be the very substantial tonnage of washery refuse which must find an outlet and that outlet will be where the user can afford to provide the equipment to burn such fuels.

In the future, as in the past, utilities will take the coal that others will not, or cannot use, mostly slack through 1-¼, ¾ or ¼ in. screen. If the quality of these slacks remains unchanged, then when washery refuse is included the average quality will be lower.

The manufacturers of steam generating equipment have kept pace with the declining coal quality. Units are operating daily without interruption, burning coal of 10 to 12% moisture, 15 to 18% ash, with ash-fusion temperature of 1950 F.

The ash-fusion temperature is the most important condition affecting design as it limits the safe furnace exit temperature.

It is often thought that such coals are only found in the Midwest and that the coals of Pennsylvania do not have such low ash-fusion temperatures. Unfortunately, this is not the case, although such coals are relatively few.

If during the next ten years there is a slight reduction of coal quality will there be any serious problems in burning such coals?

From the performance of many large utility installations it is safe to predict that the equipment manufacturers can design units that will give satisfactory performance under like conditions of load with coal 5 to 10% lower in quality, provided the fusion temperature of the ash is not much lower than the coals now in use.

Coal will increase in price over the long pull. This, plus the pressure of Public Service Commissions for lower rates, or perhaps pressure to prevent raising rates, will cause further search for higher economy.

Boiler pressures of 1500 psi are common, steam temperatures of 825 and 950 F are also general. There are plants projected with still higher pressures and 1050 F steam temperature.

Reheat will be more generally used wherever the economics of the situation warrant.

These higher temperatures, particularly with reheat, present a more difficult problem to the equipment manufacturers.

A 1350 psi, 925 F, 380 F feedwater unit requires 1080 Btu per pound of steam. Such a unit can maintain the full steam temperature of 925 F down to about 60 per cent of full capacity when burning coal whose ash-fusion temperature is 2,000 F.

A 1500 psi, 1,000 F steam temperature and 1,000 F reheat—with feedwater at 420 F—requires 1,270 Btu per pound of steam. The corresponding gas weights are 1.23 pounds and 1.44 pounds.

Assuming the temperature of gas entering superheater to be 2,000 F, the gas temperature drop will be 740 F and 1160 F, respectively. The temperature of gas leaving the superheating surface will then by 1260 F and 840 F. With a saturation temperature of 596 F it will be seen that with fixed burners there is no margin of gas temperature to permit full steam and reheat temperatures below full load capacity.

Therefore, if any range of control is wanted, the gas temperature entering superheater must be raised. Gas temperatures in excess of 2,000 F, when burning a low fusion ash coal, will probably result in some fouling of the superheater with ash or slag.

Recent developments in furnace and burner design for pulverized coal fired units have made it possible to extend the range of superheat and reheat control (12).

Future developments to meet the demand for wide range control of superheat and reheat may include radiant surface in either superheat or reheater, or both.

Radiant superheating surface is used in stations of the Wisconsin Electric Power Co. and the Kansas City Power & Light Co.

High superheat and reheat temperatures, a wide range of control, and low fusion ash coal present a difficult problem to the designer, but if we may judge by past experience there is reason to believe the industry will solve this problem.

Not all steam generating units will be fired with pulverized coal. Boilers of capacities up to 200,000 pounds may be advantageously fired by chain grate, traveling grate, or spreader stokers. Any of these stokers will burn very low grade high ash coals satisfactorily. There are many chain or traveling grate installations burning washery refuse of 20 to 25% ash of low fusion temperature.

(Continued on page 69)

12. See Furnace Performance Factors—Special Research Committee A. S. M. E.—presented at the Semi-Annual Meeting, June, 1947.

Continuous Stock Production

By Otto Goy

THIS ARTICLE is published here for its value in showing how the pulp and paper industry in Germany is meeting its postwar problems. It is not presented as a contribution to the advancement of the papermaking art.—Editor.

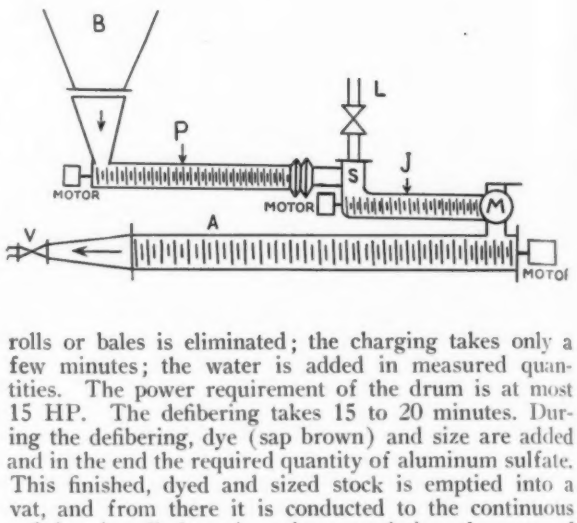
As the production of paper increased and the size of the mills and paper machines became larger and larger there arose the desire for continuous stock preparation instead of the intermittent preparation in the hollander. The first in the industry to attain this result were the large newsprint factories, where chemical pulp, groundwood and other furnish are mixed in large chests and continuously fed to the paper machine by special regulators. America has led the way in this field, major European works have followed. Where half-stuffs had to be reduced by beating, refining mills were used instead of the intermittently operating hollanders, and if necessary, several refining mills were connected in series in order to give the stuff the desired quality after a single passage.

The conical stuff mills (jordans) have long been known, but they were used mainly to give the last refining to the stuff previously beaten in the Hollander and were therefore set up near the paper machine. There are, however, some mills which beat and refine the stuff in a passage through several conical stuff mills without hollanders.

Later other mills came into existence. The Kirchner-Strecker turnstile mill became very popular. It makes possible a more elastic, fiber-protecting treatment under low surface pressure and with a high output. Another machine for continuous grinding is Voith's continuous hollander. It consists of a large hollander roll with bed plate, which is contained in a tightly fitting vat. The stuff enters at one end of the cylinder and runs in spirals about the roll toward the other end, while passing the bed plate again and again. It has been found satisfactory in strow carton works.

In spite of the advantages which continuous stock preparation undoubtedly gives, the time-tested hollander has maintained its position in most mills. There are many reasons for this. First, it is possible to treat the stuff individually in the hollander; second, the sizing and dyeing is done in the hollander, which may require much time before the desired color of the paper is properly found; third, the hollanders are already there. The first reason is decisive especially for plants with a changing production program and for paper mills making strong paper and special paper, such as cigarette paper, banknote paper and the like. Also for the manufacture chemical fibre papers, such as spinning paper and sack paper, we find hollanders in use for stock preparation.

When changing over to the production of these papers during the war, the Kabel A.G. paper works, which ordinarily made newsprint, attempted to arrange a continuous stock preparation by connecting in series a number of existing refining machines. Chief engineer Wilhelm Hulke reported on this in the Wochenblatt fur Papierfabrikation (*). The cellulose rolls or bales are, after removal of the strings, introduced into a defibering drum of their own design, about 3 m in diameter and 3.3 m in length. The chopping loose of the



rolls or bales is eliminated; the charging takes only a few minutes; the water is added in measured quantities. The power requirement of the drum is at most 15 HP. The defibering takes 15 to 20 minutes. During the defibering, dye (sap brown) and size are added and in the end the required quantity of aluminum sulfate. This finished, dyed and sized stock is emptied into a vat, and from there it is conducted to the continuous refining installation via a box regulating the rate of passage. The grinding installation consists of two face-plate hollanders equipped with bars and connected in series, two Voith continuous mills with bar filled cylinders and stone bed plates, a stone-filled conical stuff mill, and a stone-filled Kirchner-Strecker turnstile mill. This rather curious combination of grinding machines was not founded on any particular purpose but was the result merely of making use of the existing machines. Yet this war-like setup of the stock preparation plant has yielded remarkable results. While formerly with normal vat hollander beating 5 men per shift were needed for an output of about 30,000 kg, the same output now required only 1.5 men. The power requirement for the complete beating of the pulp also has dropped considerably, because in the continuous refining plant the circulation work of the vat hollanders and the no-load work during the filling and emptying periods are eliminated. Beating of hard sulphite pulp 25 degrees (15°-40°) Schopper-Riegler, in the vat hollander, required about 38.6 kilowatt hours per 100 kilograms of pulp or 1.34 kilowatt hours per 100 kilograms of pulp per degree Schopper-Riegler whereas continuous refining to the same extent required 23.5 kilowatt hours per 100 kilograms of pulp or 0.92 kilowatt hours per 100 kilograms of stock per degree Schopper-Riegler. The pumps and vat circulation consumed about 1/3 of the beating energy saved, leaving a net of 2/3 of the total saving. The degree of beating can be controlled over a wide range by adjusting the power absorption as shown by the ammeter making due allowance of course, for variations in the rate of flow. Chief Engineer Hulke has concluded that with continuous beating, great savings in personnel and power consumption and that it may be employed for Sulphite papers as well as many others.

Director Fritz Offerman in Muskau (Upper Lausitz) has gone one step further (**). The developed and tested a continuous process for the digestion of wood wastes and annual plants. After numerous cooking tests in an experimental digester he had become convinced that thin shavings can be transformed into a hemi-cellulose by treating with suitable alkalis at a

* Wochenblatt für Papierfabrikation (German Weekly on Paper Production), No. 20, Vol. 1942.
** Papierfabrikant—Wochenblatt für Papierfabrikation, No. 2, 1943.

temperature of 150 to 170 deg. C, in 45-50 minutes. On the basis of this knowledge he designed an apparatus for the continuous digestion. The fundamental idea was to carry out the disintegration of the raw material in a soaked hot state prior to the actual chemical digestion, because thus the disintegration requires much less power than a previous disintegration in the cold state. The mechanical disintegration and the chemical digestion were to occur in direct succession in the same machine.

There resulted the following setup: Directly behind a disintegration mill there was disposed a digestion tube, which replaces the digester in chemical pulp mills. It may be of any desired diameter and length, depending on the time during which the raw material is to be treated in the apparatus. The diagrammatical drawing (fig. 2) illustrates the arrangement. The ground raw material, for example, chips, reed, straw, and the like, drops from a bunker B into a press P, where it is compressed to a wad which is tight against the pressure in the apparatus. After going through a heat-expansion chamber, the wood reaches a collector S, into which the hot cooking liquor is introduced from above. This alkali was previously prepared at the desired concentration and temperature. The alkali and the raw material are picked up at the foot of the collector by a worm, which continuously moves both in the heated mixing tube J, mixing them intimately and bringing them to the temperature prevailing in the apparatus. The hot, soaked raw material then passes a refiner M, which disintegrates it to a fine, uniform material, ready for the digestion. The latter occurs in the connected tube A, in which a worm propagates the soaked, hot material slowly and constantly under maintenance of the pressure and temperature to the outlet valve V.

The stock discharged at V is freed from the cooking liquor by draining and washing and then passes through another refiner for the production of cardboard. It can then be sent to the board mill in the form of a product ready for the board machine, while for processing toward paper, it will have to be sorted first and possibly refined again. The extracted waste liquor is employed again for the preparation of fresh cooking liquor. The actual consumption of alkali is therefore quite low, as compared with other processes. For grasses it amounts to about 3 kg of caustic soda per 100 kg of digested material.

Since after having been used for one or two days the liquor contains considerable quantities of dissolved substances, such as silica, resins, lignin etc. A certain portion is discarded and replaced by fresh alkali. This discarded waste liquor can be used for sizing dark cardboard and paper, as it contains large amounts of saponified resins.

Since the digestion takes place at a high temperature, the installations must be well insulated. This makes possible a steam consumption of 300-400 kg per 100 kg of finished stock. The power requirement is about 35 kWhr per 100 kg of stock in the case of the digestion of grasses; for the digestion of wood wastes it is somewhat higher. To run the plant with an output of 30,000 kg in 24 hours requires 2 workers in 3 shifts, or 6 workers, to which must be added an assistant to haul in the raw materials.

For the production of a half-stuff for cardboard and wrapping paper from wood wastes requires a cooking liquor containing 0.5 to 0.8% of NaOH and a digestion time of ½ hour. The temperature should not exceed 175 deg C, corresponding to a vapor pressure of about 118 PSI. For the digestion of annual plants much lower temperatures and alkali concentrations will do.

A New Appraisal of the Fuel Situation

(Continued from page 67)

If furnaces are not water-cooled there is trouble due to erosion or melting of brickwork, slagging of furnace walls or boiler bank.

Bituminous coal of 40% ash may be burned, coke breeze of 30% ash has also been successfully burned.

The spreader stoker is unique in respect to the wide variety of coal it can handle—high or low volatile with ash content up to 30 to 35%. Size distribution is important, preferably all through 1-in. or ¾-in. screen, and for friable coals, a 1-¼" screen. For high ash coal on large installations, the continuous ash discharge type is preferable and would be specified.

Mention should be made of underground gasification and of the development of heat and power from fissionable materials. Each of these projects is a major problem on which development has barely started. Hardly enough data are available to predict future progress.

Gas turbines fired by pulverized coal are in process of development. From the viewpoint of the manufacturer of pulverizing and burning equipment, and the knowledge gained of the behavior of low fusion ash coal in furnaces, and the effect of flow of gas borne ash particles at high velocity over heating surfaces, it seems evident that a considerable program of research must be undertaken.

It may appear that scant attention has been paid to coal-burning gas turbines, nuclear energy and underground gasification. The excuse is that it is probable that 90 to 95% of future power production will derive from coal burned in steam generating equipment.

In conclusion, it is believed safe to state that in the future coal and steam will furnish an increasing proportion of the primary energy for electric power production, that conditions indicate a slight lowering of coal quality but not to the extent that equipment manufacturers cannot furnish fuel burning aparatus and steam generating equipment that will meet all reasonable demands for capacity and performance.

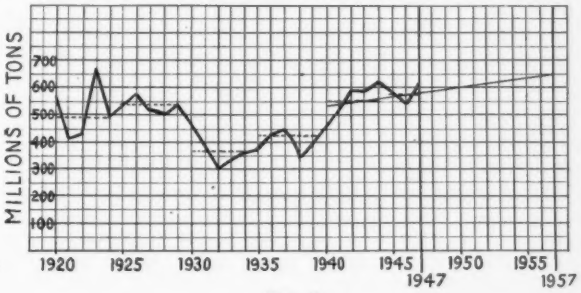


FIG. 2

From the Mineral Industry Surveys of the United States Department of the Interior the annual production of bituminous coal is plotted on the curve shown in Fig. 2. If the depression years are omitted, it is possible to project the production to 1957 up to 650 million tons. It is believed this curve or chart shows that a very considerable quantity of bituminous coal was displaced by fuel oil, and assuming that the use of oil for fuel will decrease in the future, and due allowance made for this fact, the projected consumption would probably be in excess of 700 million tons.

New Papers and Their Uses in World War II

By M. S. Kantrowitz, Technical Director, U. S. Gov't. Printing Office, Washington, D. C.

Introduction

The entry of the United States into World War II was closely followed by the necessity for innovations to win the struggle as swiftly as possible with a minimum of casualties. These innovations were not only required in the production of materials of war employed at the front, but their utilization was also required behind the lines.

The paper industry played a very important part in the war effort in creating manufactured products which were never before made in the history of paper making. Among such papers are safety or identifiable paper used in the rationing program, war prisoners' paper, Federal war ballot paper, V . . .— mail writing paper, high wet strength paper, and fluorescent map and chart papers, which will be discussed here briefly.

Ration Paper

After the establishment of the War Production Board and the Office of Price Administration, ways and means were designed to bring about a program of rationing.

To protect this rationing program against forgery and failure, it became desirable to create new types of paper for printing ration stamps, so constructed as to make duplication extremely difficult and costly. Such a paper was made to contain secret identification characteristics which would positively establish its genuineness under tests.

Identifiable paper, as heretofore manufactured for use, generally as currency or bank note paper, had incorporated therein short red and blue silk fibers as a means of identification. These silk fibers are visible to the naked eye and are of origin foreign to the cellulosic fibers from which the paper is fabricated. Identifiable paper was also proposed wherein the mark of identification comprised fibers which fluoresce under ultra-violet light. In the printing of War Ration Book No. 1 for sugar rationing, and Book No. 2 for food rationing, precaution was taken to discourage the counterfeiting of stamps by incorporating into the paper structure such fluorescent cellulosic fibers invisible in ordinary light but visible under the influence of ultraviolet light.

In connection with the printing of subsequent war ration books, the Technical Division of the Government Printing Office engaged in research to develop identifiable paper which would distinguish genuine from counterfeit ration coupons other than the use of fluorescent fiber paper. We found that by incorporating ferric chloride-treated fibers into the structure of the paper which we termed "KG" fibers for security reason to the extent of 0.5 percent, they will remain colorless and invisible in the sheet until treated with certain chemical reagents, such as potassium ferrocyanide and orthophosphoric acid. They then become visible and individually identifiable by acquiring a distinctive permanent blue color.

The characteristics of these "KG" fibers presented several advantages which are not obtainable with paper employing either silk fibers or fluorescent fibers. One such advantage of employing chemically treated fibers rather than silk fibers is that they are invisible within the paper structure and they do not reveal their presence to counterfeiters. Another advantage is that they are basically identical in composition with the untreated fibers comprising the entire sheet of paper. As compared with fluorescent fibers, paper containing the chemically treated fibers becomes practical for use in the field without necessitating expensive ultraviolet light equipment for tests. Another advantage of chemically treated fibers is that unlike fluorescent fibers, they do not lose their effectiveness upon exposure to sunlight, bleaching agents, acids, alkalies, water, oil, or gasoline, and they therefore remain in the paper structure as a permanent means of identification.

At the time the orders were issued for the printing of war ration books Nos. 1 and 2, our experiments had not progressed to a point warranting their incorporation into the process for making the paper for these books. The paper used for printing subsequent ration books beginning with book No. 3 made use of such chemically treated cellulosic fibers.

A description in detail of the preparation of the chemically treated fibers and their incorporation into identifiable paper is given in U. S. Patent No. 2,379,443 dated July 3, 1945. During the late war, the manufacturing process was confined to only four paper mills which received contracts for the production of rationing paper.

War Prisoners' Paper

In accordance with International Law, prisoners of war are permitted to write twice every month to their relatives or friends at home.

To guard against the sending of secret messages by war prisoners, by means of writing with invisible or sympathetic inks, the War Department presented the problem to the Government Printing Office to procure paper which would immediately develop writing with invisible inks into a visible form or visible characters without the application of heat or chemical reagents.

After some research with laboratory sheets, the Government Printing Office developed specifications for a coated paper, color sensitive to all invisible inks of either the acid or alkaline types. Among such substances are the citric acid of lemons, the lactic acid of milk, starch solution, sodium bicarbonate or baking soda, sodium carbonate or washing soda, or other substances which might be employed for secret message writing and might be commonly obtainable in war prison camps as common household commodities.

The sensitively coated paper which was first utilized in experiments, consisted essentially of a paper base coated with clay containing a chemical substance in the form of a mechanically incorporated dyestuff, which reacted when moistened or when written upon with an acid invisible ink to produce a green color. This paper did not react, however, to produce distinctly visible writing with alkaline invisible inks. Our search, therefore, led us to incorporate into the paper coating a second element which would react with alkaline solutions to produce a red coloration when the sympathetic or invisible ink happened to be of an alkaline nature. The paper manufactured on this plan immediately showed up the writing with acid or neutral invisible inks in green color, and

Presented at the Annual Meeting of the American Pulp & Paper Mill Superintendents Ass'n., May 20, 1948, New Orleans, Louisiana.

with alkaline invisible inks the writing appeared in red.

Concerning the permanence of these developing colors, surveillance tests have shown that they will last for months, and surely a sufficient length of time to be clearly detected by censors. It is clear that the advantage of this device lies in the fact that a prisoner of war may be permitted to freely write upon this specially prepared so-called "Sensicoat" paper, a name given by the chemists of the Government Printing Office to describe the sensitive nature of its coating. The prisoner of war may write upon this paper with any kind of visible ink but cannot use any invisible writing inks since all of them—acid, neutral or alkaline or even plain water itself, will develop color when brought into contact with the paper.

This type of paper was manufactured on a production basis for the printing of postal cards and stationery ordered by the War Department for distribution to war prison camps as a protection against the transmittal of secret messages by prisoners of war. These postal cards and the writing paper were printed with directions for their use in three languages,—Italian, Japanese, and German.

The paper, as originally developed, was a fifty-six pound coated sheet, (basis 17 x 22 inches per 1,000 sheets) with the color sensitizer incorporated into the coating. Its high cost and heavy weight were factors influencing us to develop a lighter, uncoated, and much less expensive paper.

The requirements for such a paper were severe. It was to be an uncoated stock, strongly sensitive to writing with all types of solutions which could be used as sympathetic inks, as unreactive as possible to humidity and ordinary handling, but nevertheless capable of being manufactured at a substantially lower cost than the first paper used for this purpose. Intensive research revealed ways of meeting these requirements.

Samples satisfactory from a laboratory standpoint were made up, and approved by the War Department which then notified the Government Printing Office, that an order of stationery involving millions of sheets had been executed, and was to be made by the new process. This necessitated immediate action on the transformation of the process from the laboratory to the much more complicated plant production scale, and involved selecting the fastest and most economical method of applying the sensitizing formula, which would give an essentially white sheet and high color sensitivity to invisible inks when applied from a pen.

It was finally decided that the rotogravure press and the aniline press would both be satisfactory from those standpoints and, to further simplify and economize on the paper's manufacture, search was made for a manufacturer who could make the base paper, sensitize, and print it simultaneously, and then cut the forms and cards to the desired size. Although mills of such versatility are rare, we found one paper manufacturer with not only these facilities but also having an ink department fully equipped with modern high grade ink grinding mills. This paper mill was contacted and readily agreed to lend its facilities to the experimental work necessary to the changeover from laboratory to plant production basis.

A series of laboratory and plant experiments were made ending in a completely satisfactory paper which could be made in one plant from start to finish, including the grinding of the special dye in the sensitizing formula. We termed the new paper "Anilith" War Prisoners' Stationery to differentiate it from the original "Sensicoat" War Prisoners' Stationery.

This paper served its purpose so well, that attempts to transmit secret messages thereon were, if not definitely halted, at least greatly reduced. The failure of this source of information which had been relied upon by German intelligence was apparently of sufficient importance to force them to secretly instruct German prisoners of a trick method of secret writing, previously entrusted only to specialists in the field of espionage. The method worked as follows: A small amount of a plastic substance of putty-like consistency was hidden within packages of food, clothing, and other articles permitted to be received and distributed by the Red Cross to German prisoners of war. This plastic material, about the size of the head of a kitchen match, was accompanied the first time by a small scrap of printed paper which instructed the prisoner, to mold the bead on the end of a match or similar stick of wood, and use it as a pencil avoiding pressure. This method of writing left no visible trace on the paper, and the application of steam or ultraviolet light revealed no trace of secret writing. Such writing was capable of development with chemicals, by the recipient in Germany, into easily legible characters.

These were so-called "dry inks." Their analyses, when confiscated from prisoners, showed the greatest percentage of them contained about 0.5 percent of a substance which, for security reasons, must here be called "Chemical X." Laboratory work was started to develop a paper which would detect minute amounts of this "Chemical X" when examined under the Geneva Conference Rulings, but which at the same time would retain its sensitivity to all liquid invisible inks.

The final result, with which the Office of Censorship was highly pleased, comprised an uncalendered, coated sheet processed with a water sensitive formula and included great sensitivity to the detection of "dry inks." The writing quality of this paper which we termed "Coatalith" is as good and the liquid invisible ink sensitivity better than the "Anilith" War Prisoners' Stationery which it superseded.

Federal War Ballot Paper

As a result of the passage of the Soldier Ballot Bill by Congress, it became necessary that forms be supplied the soldiers which could be readily and positively identified as genuine. The identifying characteristics of this paper were to be such as could be incorporated very quickly and with existing paper making equipment. They were to be able to withstand the action of salt water, heat, and high humidity, and to require no complicated tests to reveal their presence. Several suggestions were made to the War and Navy Departments by which the Ballot Paper might be made to meet these requirements. Several samples were submitted to Army and Navy officials and upon their approval there was included in the paper a safety feature which consisted of printing, on both sides of the ballot, a design using an ink invisible under daylight or artificial light but which fluoresced brightly when stimulated by ultraviolet radiations. The fluorescing design was composed of the phrase "Official Federal War Ballot" horizontally repeated and separated by a star between each repetition. The words were staggered on successive lines of printing and the lines of printing were themselves separated by three parallel continuous wavy lines.

V . . . — Mail Writing Paper

When the V . . . —Mail service was inaugurated, the War Department requested the cooperation of the Government Printing Office in developing a paper suitable for overseas correspondence of the Armed Forces. This purpose demanded of the paper sufficient strength for

endurance to handling in order to insure safe arrival when mailed to distant parts of the world and proper color for photographic reproduction upon miniature film. The red printed matter on the forms was required to reproduce well photographically.

The composition of the paper was approximately 30 percent groundwood pulp and the remainder bleached chemical wood pulp.

It was necessary for the paper to possess sufficient brightness and opacity to produce good contrast with writing ink and not permit undesirable "show through." The brightness of the paper was specified to be between 66 and 70 percent and the opacity to be not less than 93 percent. If the specified brightness and opacity could not be obtained based upon the fiber content alone, it was stipulated that sufficient filler, such as titanium dioxide, should be added to the paper in the course of manufacture to obtain the specified values for these characteristics.

Characters written with ink had to be clear cut without feathering and this quality of the paper was determined by testing it with an ink consisting of an aqueous solution of a dyestuff.

Because of difficulty experienced in photographically recording letters written with hard pencil and especially minutely written characters in order to obtain the largest possible message in the allotted space, it was necessary that the paper be suitably sized.

High Wet Strength Paper

Certain war purposes necessitated a paper possessing high strength and scuff resistance when wet. Such a paper was required for printing maps and training and instruction manuals for the Armed Forces for use under severe conditions not only on the ground but also in planes, tanks, and ships. It was, therefore, required to resist the effects of salt water, or rain water, or perspiration when carried by the sailor or soldier, as well as the grease and grime associated with motor vehicles.

To meet these unusual war conditions, it was necessary that the specifications for this type of paper include certain physical properties to provide for such extraordinary resistance. These physical properties included high folding, tensile, tearing and bursting strengths; high retention of wet strength, resistance to scuffing and abrasion when wet, good erasing qualities, dry or wet; good opacity under dry or wet conditions; minimum expansion and contraction; and good printing quality.

High wet strength papers may be produced by treatment of the paper fibers with insoluble resins such as melamine-formaldehyde or urea-formaldehyde resins in the beater or at some other point of application in the paper making operation prior to sheet formation. Weber,*(1)* of the National Bureau of Standards, states "Best results are obtained by adding the solution to the stock at some point between the screen where coarse matter is filtered out and the point where the stock flows on to the wire. Excellent results are obtained by adding it to the stock as it enters the head box." When the resin is mixed with the paper stock, it attaches itself uniformly to the fibers and forms such a close bond that it cannot be washed free.

The application of melamine or urea-formaldehyde resins to paper fibers increases their wet strength from almost zero to about 50 percent of their original dry strength as measured by the bursting and tensile strength after soaking in water for one hour at a controlled temperature.

The resin is effective on any kind of paper fibers. It may be applied to rag, sulphite, soda, sulphate or groundwood. The best results are naturally obtained when used with pulps made from such strong fibers as rag or sulphate.

Melamine or urea-formaldehyde resins are also used in the manufacture of blue print paper and in papers made for wrapping vegetables, meats, and other food products. The additional strength obtained by means of these resins permits the use of lighter weight paper for serving these purposes.

Fluorescent Map and Chart Papers

Certain substances are said to show fluorescence when they convert invisible ultraviolet light, commonly known as black light, into visible light of various colors, according to the nature of the substance upon which the ultraviolet light falls. Fluorescence continues only during the period in which the ultraviolet light is shining upon the material.

The cause of fluorescence lies in the pigments or dyestuffs which may be either organic or inorganic. Some organic pigments and dyes possess high fluorescent brightness and brilliant color but are subject to fading and loss of fluorescence on exposure to sunlight. The inorganic pigments, the class most commonly used, consist of zinc sulphide or combinations of zinc and cadmium sulphide. Such pigments must be of the greatest possible purity to insure best fluorescent brightness and color. The fluorescent color is a direct function of the pigment, therefore, many colors may be produced ranging from a light blue to a deep red depending upon the ratio of zinc sulphide and cadmium sulphide in the pigment, by the amount and kind of activating heavy metal used, and by the temperature employed in the preparation of the pigment.

The fluorescent property of these pigments is dependent upon their crystal structure, therefore care must be taken not to crush the particles when making fluorescent products. With this proper precaution, the inorganic zinc sulphide or zinc and cadmium sulphide pigments can be ground in roller mills to make satisfactory printing inks; they can be dispersed in the coatings of paper or they can be incorporated into the structure of the paper itself.

The adoption of fluorescence for war uses has involved the printing of millions of fluorescent aeronautical maps and charts.

The first fluorescent charts were printed by the offset process on ordinary map or chart paper using fluorescent inks of different colors. Later charts were also printed with ordinary offset inks on specially coated paper which itself fluoresces.

The special care necessary in handling fluorescent inks, the low resistance of the coated paper to handling, and the ease of destruction of the fluorescent coating by erasure, led to the development of a higher quality lithographic chart paper in which the fluorescent properties have been incorporated into the structure of the paper itself. With this newly developed paper, the printing of aerial navigation maps or charts involved no special or new technique for the lithographer. Any desired detail could be printed by the offset process using the customary lithographic inks. The entire paper sheet becomes luminous under ultraviolet or black light and so brightens the printed matter that it may be easily read in the dark.

Reference

1. Weber, Charles G. Experimental manufacture of paper for war map. Research Paper R. P. 1751, Vol. 37, December 1946. U. S. Department of Commerce, National Bureau of Standards. Wet strength papers for modern war maps. Chemical and Metallurgical Engineering, Vol. 52, No. 3: 109 (March, 1945).

A.S.T.M. D-9, Sub. VIII, Sec. F, June 23, 1948 Proposed Specification for Absorbent Insulating Paper

Scope

1. This specification covers uniform, high grade absorbent papers, made from cotton pulp, high alpha cellulose content wood pulp, or unbleached sulphate wood pulp, which will readily absorb resins and be suitable for use in the manufacture of laminated and impregnated sheet for electrical insulation.

Types

2. The following four types are covered by this specification:

TABLE I.—ABSORBENT INSULATING PAPER TYPES

Type	Absorbency	Stock	
1	High	Cotton Fiber	
2	High	Wood Pulp	High Alpha Cellulose Content
3	High		Unbleached Sulphate
4	Medium		Unbleached Sulphate

General Requirements

3. (a) Form.—To be furnished in rolls with paper thickness and width, core inside, and roll outside diameters as specified in order.

(b) Material and Workmanship.—As uniform in thickness, formation, texture, density, and physical properties, and as free from welts, wrinkles, creases, holes, slime spots, stains, specks, weak spots, blisters, tears, cuts, and other defects as best manufacturing practice will permit.

(c) Foreign Material.—Shall contain no rubber or metal and be as free from loading, sizing, rosin, dirt, and other foreign material as best manufacturing practice will permit.

(d) Color.—Natural, unless otherwise specified.

(e) Splices.—Permitted on not more than 15 per cent of rolls, but no roll to contain more than two splices. Location of each splice to be marked by an insert. Splice to be made with adhesive, such as, glue, latex, or dextrin. Gummed or tissue tape splices not acceptable.

Detail Requirements

4. The various types of paper shall conform to the physical, chemical, dimensional, and electrical requirements prescribed in Tables II, III, IV, and V, respectively. The averages referred to in following tables apply to the sample as defined, because control of variation in certain properties within a roll or between rolls is essential to insure satisfactory performance in producing impregnated laminates.

TABLE II.—CHEMICAL REQUIREMENTS

Property	Type	Minimum	Maximum
Water soluble sulphates (as SO_4), avg., %	All	....	0.05
Ash, avg., %	All	....	0.75
Water soluble material, avg., %	All	....	1.25
Alcohol soluble material, avg., %	All	....	1.00
Chlorides (as Cl), avg., %	All	....	0.02
pH of water extract, avg.	All	6.5	....
Water extract conductivity, avg., micromhos	All	....	40
Stock, cotton fiber, %	1	80(a)	....
Stock, alpha cellulose, %	2	90(a)	....
Stock, unbleached sulphate, %	3	100	....
Stock, unbleached sulphate, %	4	100	....

(a) Balance to be wood pulp free from unbleached or ground wood pulp.

TABLE III.—PHYSICAL REQUIREMENTS

Property		Type	Nominal Thickness, in. 0.004	0.006	0.007	0.010
Bursting strength, dry indiv. roll avg., min. psi.		1	8.4	12.6	15.0	21.0
		2	6.3	9.4	11.0	15.7
		3	11.6	17.4	20.0	29.0
		4	16.0	24.0	28.0	40.0
Tensile strength, dry, machine direction, indiv. roll avg., min. lb. per in. width		1	6.4	9.6	11.2	16.0
		2	7.2	10.8	12.6	18.0
		3	9.6	14.4	16.8	24.0
		4	12.0	18.0	21.0	30.0
Dry, cross machine direction, indiv. roll avg., min. lb. per in. width		1	3.6	5.4	6.3	9.0
		2	3.2	4.8	5.6	8.0
		3	4.8	7.2	8.4	12.0
		4	6.4	9.6	11.2	16.0
Wet, machine direction, indiv. roll avg., min. lb. per in. width		1	0.18	0.27	0.32	0.45
		2	0.18	0.27	0.32	0.45
		3	0.18	0.27	0.32	0.45
		4	0.40	0.60	0.70	1.00
Rate of impregnation, Side A, max. avg., sec.		1	12.8	19.2	22.4	32.0
		2	12.8	19.2	22.4	32.0
		3	10.0	15.0	17.5	25.0
		4	12.0	18.0	21.0	30.0
Side B, max. avg., sec.		1	16.0	24.0	28.0	40.0
		2	16.0	24.0	28.0	40.0
		3	12.0	18.0	21.0	30.0
		4	20.0	30.0	35.0	50.0
Air resistance, avg., sec.	min.	1	2.0	3.0	3.5	5.0
	max.		3.0	4.0	4.5	7.0
	min.	2	1.5	2.0	2.5	4.0
	max.		2.5	3.0	3.5	6.0
	min.	3	0.5	1.0	1.5	2.0
	max.		1.5	2.0	2.5	4.0
	min.	4	1.5	2.0	2.5	4.0
	max.		2.5	3.0	3.5	6.0

TABLE IV.—DIMENSIONAL REQUIREMENTS

Property	Type	Nominal Thickness, in. 0.004	0.006	0.007	0.010
Thickness tolerance, in., plus or minus	All	0.0005	0.0005	0.0005	0.001
Width tolerance, in., plus	All	1/8	1/8	1/8	1/8
minus	All	0	0	0	0
Core tolerance, inside diameter, in., plus	All	0	0	0	0
minus	All	1/16	1/16	1/16	1/16
Basis weight (25×40—500), lb.	All	33.0	50.0	57.0	79.0
Tolerance, plus or minus, lb.	All	2.0	3.0	3.0	4.0

TABLE V.—ELECTRICAL REQUIREMENTS

Property	Type	Minimum	Maximum
Dielectric strength, avg., v. per mil	All	125	....
Insulation resistance, avg., megohms	All	20	....
single reading, megohms	All	15	....

Sampling

5. A.ST.M. Designation: D 202.—Mark samples with arrow in machine direction. For chemical tests only make composite sample, including material from all rolls sampled in one mill run.

Methods of Test

6. The properties of the materials listed in this specification shall be determined in accordance with the following methods:

(a) Conditioning Test Specimens.—In accordance with section 3 of A.S.T.M. Designation: D 202, for those tests requiring conditioning.

(b) Foreign Material:—T.A.P.P.I. Methods T-437 and T-445.

(c) Water Soluble Sulphates:—T.A.P.P.I. Method T-468.

(d) Ash:—A.S.T.M. Designation: D 586.

(e) Water and Alcohol Soluble Material:

(f) Chlorides:

(g) pH of Water Extract:—A.S.T.M. Designation: D 202.

(h) Water Extract Conductivity:—A.S.T.M. Designation: D 202

(i) Stock

(1) Cotton:—T.A.P.P.I. T-401.

(2) Alpha Cellulose:—T.A.P.P.I. T-401 for unbleached or ground wood pulp.
A.S.T.M. Designation: D 588 for alpha cellulose.

(3) Unbleached Sulphate Woodpulp:—T.A.P.-P.I. T-401.

(j) Bursting Strength:—A.S.T.M. Designation: D 774.

(k) Tensile Strength:—Dry—A.S.T.M. Designation: D 828.
Wet—A.S.T.M. Designation: D 829.

(1) Rate of Impregnation:—A.S.T.M. Designation: D 202, except use SAE-50 mineral oil.

(m) Air Resistance: — A.S.T.M. Designation: D 202.

(n) Thickness:—A.S.T.M. Designation: D 645, Method C.

(o) Width:—Steel scale or tape.

(p) Roll Diameter and Core:—Steel scale or tape.

(q) Basis Weight:—A.S.T.M. Designation: D 646.

(r) Dielectric Strength:—A.S.T.M. Designation: D 149, Short Time Test.

(s) Insulation Resistance:—A.S.T.M. Designation: D 257, Fig. 1, d-c potential volts, min. 100.

Retest and Rejection

7. If the results of any test do not conform to the requirements prescribed in this specification, at the option of the manufacturer that test shall be repeated on two additional sets of specimens from the same batch or shipment, each of which shall conform to the requirements specified. If either of these two additional sets of specimens fails, the material may be rejected at the option of the purchaser. Notice of failure of material based on tests made in accordance with this specification shall be reported to the manufacturer within three weeks from the receipt of the material by the purchaser. Any portion of an accepted shipment of material which is subsequently found not to be in accordance with this specification may be rejected provided the manufacturer is notified within 90 days from the date of receipt of the material by the purchaser.

Packing and Marketing

8. (a) Packing.—The material shall be packed in moisture-proof wrappers, boxes, or cartons so constructed as to insure acceptance by common or other carriers for safe transportation at the lowest rate to the point of delivery, unless otherwise specified in the contract or order. Ends of rolls shall be protected with edgers to insure against edge damage.

(b) Marking.—Each roll shall be marked on the side and ends with the name and type of material, specification number, purchase order number, manufacturer's name and/or trade mark, manufacturer's roll number, lot number, date of manufacture, and weight of roll.

SECTION F, SUB. VIII, A.S.T.M. D-9
SPECIFICATIONS ON INSULATING PAPERS
LIST OF MEMBERS—JUNE 23, 1948

P—Producers (14) C—Consumers (14)
G.I.—General Interest (6) Total (34)

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O. E. ANDERSON Westinghouse Electric Corp. Trafford, Pa.	C
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B. W. SCRIBNER U. S. Department of Commerce National Bureau of Standards Washington 25, D. C.	GI
L. S. TOBIAS International Paper Co. Glens Falls, N. Y.	P
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Section F—Subcommittee VIII—ASTM D-9

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Central Paper Co.	G. H. Mullen	National Bureau of Standards	B. W. Scribner
Consolidated Edison Co. of N. Y.	C. T. Hatcher	National Vulcanized Fibre Co.	G. H. Mains
Continental Diamond Fibre Co.	E. O. Hausmann	Northern Electric Co.	E. C. Longhurst
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INDUSTRIAL DEVELOPMENT

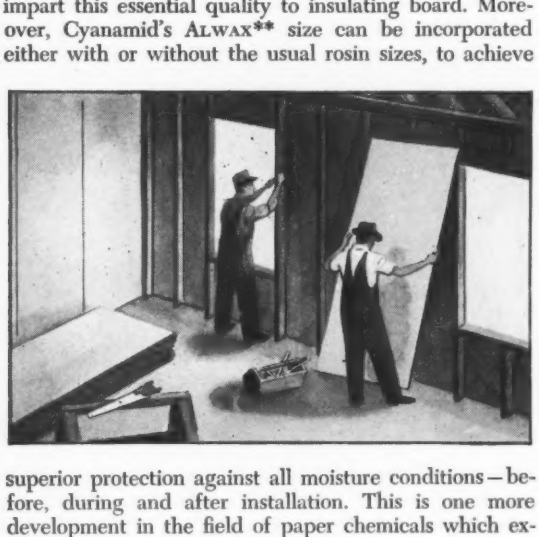
Paper Trade Journal, in this new section, proposes to make space available for discussion of administration and operational problems of the pulp and paper industry, as well as for the presentation of independent studies and research on technical and engineering subjects. Noteworthy features of paper mills, converting plants, associated industries and institutions also will be presented, as they become available. These pages will be open to all who are qualified to discuss subjects within these limits. Manuscripts, submitted for approval, will be welcomed.—E. P. McGINN, Industrial Editor.

Paper Product Pointers
FROM CYANAMID

Re: Wider Markets for Paper...

ALWAX SIZE IMPARTS WATER RESISTANCE ...IMPORTANT FOR GOOD INSULATING BOARD

Moisture resistance is essential to any good insulating board to prevent distortion, sagging and general deterioration. And wax sizes, one of the more important developments in paper sizing in the last 140 years, now impart this essential quality to insulating board. Moreover, Cyanamid's ALWAX** size can be incorporated either with or without the usual rosin sizes, to achieve



superior protection against all moisture conditions—before, during and after installation. This is one more development in the field of paper chemicals which extends the range of usefulness of paper and broadens the potential market for the paper manufacturer!

ALWAX sizes achieve numerous *other* improvements which increase the adaptability of paper to many fields. Just a few of them are:

- Increased lactic acid resistance in paper boards for packaging food, dairy products, ice cream, etc.
- Increased blood serum resistance in butcher wrap.
- Production of more uniform dyeing with brighter and greater color depth in calender coloring or staining of paperboard.
- Improved water resistance in coating raw stocks without sacrifice of pliability.
- Prevention of sticking when using sodium silicate treatment on the calender stack.
- Reduction of chalky feel and dusting of calcium carbonate filled papers.
- Minimizing the operating nuisance of asphalt specks picking out on the calender rolls of paper board machines making test liner.

Cyanamid has developed a variety of ALWAX sizes to meet this wide range of needs and is prepared to tailor-make others to help meet special requirements.

In addition, a complete line of paper chemicals is available from Cyanamid to help solve the gamut of problems that confront the paper manufacturer. Among these, PAREZ† Resins have gained widespread use for their ability to impart to paper numerous desirable qualities which have served to augment the all-round serviceability of paper products.

ALWAX** Sizes • WAXINE* Sizes • Rosin Size • PAREZ* Resins Synthetic Resins • Casein • Alum •, Sulfonated Oils • Fillers Defoamers • Soda Ash • Caustic Soda • Salt Cake • Acids • Clays AEROSOL* Wetting Agents • CAL MICRO** (Calcium Carbonate) and other Paper Chemicals. For low-cost chemical equivalent of distilled H_2O . . . FILT-R-STIL* Demineralizing Units. *Reg. U. S. Pat. Off. **Trade-mark

†Trade-mark of American Cyanamid Company covering its synthetic resins for use by the paper industry. The process under which PAREZ is applied in the production of wet-strength paper are covered by U. S. Patents Nos. 2,291,079, 2,291,080 and 2,345,543 and U. S. Patent Application Serial No. 453,032.

American Cyanamid Company
Industrial Chemicals Division
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

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SECTION OF THE

TECHNICAL ASSOCIATION
OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. *Edited By* R. G. MACDONALD, *Secretary*

TAPPI Notes

Herbert W. Rowe is now assistant technical director for the Nekoosa-Edwards Paper Co., Port Edwards, Wis.

Harold R. Davidson, formerly of the Great Lakes Paper Company, is now vice president of the Buckman Laboratories of Canada, Ltd., Montreal, P.Q.

Frank S. MacDonald, formerly of Sherbrooke Machineries, Ltd. is now vice president and general manager of Homad Services, Ltd., 1445 Crescent St., Montreal, P.Q. Frank J. Hoar of G. D. Jenssen Company is also president of this new company.

John C. Scarth, formerly of the Canada Paper Company is now in charge of technical control of the pulp mill of the K V P Company, Espanola, Ont.

Robert C. Paris, formerly of the N. Y. State College of Forestry is now a chemist for the Kalamazoo Vegetable Parchment Company, Parchment, Mich.

T. C. Bang has returned to Tofte Cellulose-fabrik in Oslo, Norway.

E. Schoenberg has replaced V. Mehta as the TAPPI Corporate representative of Shree Gopal Paper Mills, Ltd., Abdullapur, Punjab, India.

Robert J. Van Nostrand is now research coordinator for the Brown Company, Berlin, N. H.

Robert W. Pattison, formerly of the American Writing Paper Company, is now president of Cellulose Fibres, Inc., Holyoke, Mass.

L. J. Rys, formerly of Czechoslovakia, is now consultant for Industrias Klabindo Paranade Cellulose,, S. A. Sao Paulo, Brazil.

C. W. Wilkins, formerly of the Bedford Pulp and Paper Company, is now chemist for the National Container Corporation of Michigan, Ontonagon, Mich.

James T. Sheeby is now on the headquarters liaison staff of Rayonier, Inc., New York, N. Y.

Andreas Christensen is now production manager of the Spruce Falls Power & Paper Company, Kapuskasing, Ont.

D. C. Porter, of the Kimberly-Clark Corporation is now mill manager of the Long Lac Pulp and Paper Company, Terrace Bay, Ont.

Paul B. Corning, formerly of the West Virginia Pulp and Paper Company, is now plant engineer for Rayonier, Inc., Fernandina, Fla.

J. R. Lientz is now general superintendent of the pulp and paper division, Union Bag and Paper Corporation, Savannah, Ga.

Frank A. Jensen, formerly of Hollingsworth and Whitney Company, is now superintendent at St. Marys Kraft Corporation, St. Marys, Ga.

George A. Farrah, formerly of the Container Corporation of America, is now with the Container Laboratories, Inc., Chicago, Ill.

Roy F. Traver, formerly of the Solvay Process Company, is now assistant chemist for the Camp Mfg. Company, Franklin, Va.

Frank J. Lovegren, formerly of the Empire Box Co., Stroudsburg, Pa., is now in the technical department, W. C. Hamilton & Sons, Miquon, Pa.

Ernest C. Manders, formerly of the Kalamazoo Vegetable Parchment Co., Ltd., is now with the Long Lac Pulp & Paper Co., Terrace Bay, Ont., Canada.

George B. Hughey is now research chemical engineer, senior grade, with Merck & Co., Inc., Dunellen, N. J.

John Carson, formerly of The Mead Corp., is now superintendent of the Columbian Payne Co., Buena Vista, Va.

Arthur A. Bernhardt, formerly of the Kalamazoo Vegetable Parchment Co., Kalamazoo, Mich., is now chemist and technical supervisor of the Sulphate Mill, Kalamazoo Vegetable Parchment Co., Ltd., Espanola, Ont., Canada.

Lawrence W. Whitaker, formerly of the S. D. Warren Co., is now director of laboratories, Stein-Hall & Co., Inc., Long Island City, N. Y.

A. O. Bragg, formerly of the Diamond Alkali Co., is now with the Treesdale Laboratories, Benedum Trees building, Pittsburgh, Pa.

Fred Herbolzheimer, Jr., formerly of the University of Maine, is now assistant technical control engineer for the Marinette Paper Co., Fort Edward, N. Y.

Miss Eleanor F. Horsey, formerly of the Hercules Powder Co., is now chemist in the Chemical Division of the Glenn L. Martin Co., 50 East Preston Street, Baltimore, Md.

New TAPPI Members

Colin R. Beeson, sales engineer, American Bitumuls Co., San Francisco, Calif., a 1935 graduate of Lehigh University.

Alastair H. Bruce, managing director, Westfield Paper Co. Ltd., Westfield Bathgate, West Lothian, Scotland. Attended Uppingham School, Rutland, England.

Paul De C. Bray

Paul De Costa Bray, Professor of Pulp and Paper Technology, University of Maine, Orono, Me., died suddenly on May 25. Mr. Bray graduated from the University of Maine in 1914 and worked for the Katahdin Pulp & Paper Co., and Eastern Mfg. Co., Lincoln, Me., prior to joining the University Staff in 1925. He was a charter member of the Technical Assn. of the Pulp & Paper Industry and engaged actively in committee work. Nearly every graduate of the University since 1925 in the pulp and paper industry studied under the direction of Mr. Bray. He is survived by his widow, Irene.

Agricultural Residue Pulps—Comparison of Pulping Processes*

By S. I. Aronovsky[1], A. J. Ernst[2], H. M. Sutcliffe[3], and G. H. Nelson[4]

Abstract

The economic status of cereal grain straws as a source of pulp for the manufacture of fine paper specialties has improved because of the great progress made recently in increased mechanization and efficiency in collecting and baling these straws. A series of cooks was made on wheat straw by the soda, kraft, neutral sulphite, ammonia, magnesium acid sulphite and ammonium acid sulphite processes, under uniform pulping conditions. The pulps were screened, analyzed chemically, and tested for physical strength properties by the standard methods. The data are given in ten tables and illustrated in two graphs.

In considering the alkaline processes it is shown that each of these processes possesses some advantage over the others in the production of pulps from wheat straw. The largest pulp yields were produced by the neutral sulphite process and the smallest by the soda process, with the kraft pulp yields somewhat larger than those produced by soda pulping. However, the strength characteristics were in the reverse order, with the soda pulps being the strongest, followed by the kraft and then the neutral sulphite pulps. Pulping with ammonia was considered to be impractical because of the large amounts of reagent required.

The acid pulping processes produced relatively weak and brittle pulps from straw. It was apparent that these processes are unsuitable for producing strong and satisfactory pulps from agricultural residues of high silica content.

The bleached agricultural residue pulps had better strength properties, with the exception of tensile strength, than the unbleached pulps, and the largest increase in strength on bleaching was evidenced by the neutral sulphite pulps.

The possibilities of fibrous agricultural residues as a source of papermaking pulp for the production of fine papers are becoming more apparent and of increasing interest to the pulp and paper industry. The use of seed flax tow fibers for fine paper is increasing rapidly, and many manufacturers are seriously considering cereal grain straws and other agricultural residues as a supplement to wood pulp for this purpose. The great progress made recently in increased mechanization and efficiency in collecting and baling agricultural residues, particularly cereal grain straws, and the greater scarcity and higher cost of pulpwood are reducing the economic advantages of the latter material to a large extent. Furthermore, industry is becoming increasingly aware of the large economic loss sustained by insufficient utilization of the enormous annual production of these agricultural residues.

The establishment of a definite research program to study the production of a papermaking pulp from agricultural residues was discussed in a previous report *(2)*. That report also described the calibration of equipment, in terms of known commercial wood pulps, for testing the physical strength characteristics of these residue pulps. The present paper deals with the evaluation of the commercial pulping processes in terms of a single agricultural residue, wheat straw. These data should be useful in determining the superiority of one pulping process over another for the type of raw material involved, and in eliminating unsuitable processes with a minimum expenditure of time and material.

Experimental

Raw Material

The raw material was combine straw from soft winter wheat (Wisconsin Pedigree) grown in central Illinois in 1943. The straw was slightly weathered, as indicated by its dull grayish cast, but it appeared sound otherwise. It had been baled with a pick-up baler and was relatively free of excess chaff and weeds.

The straw was chopped in an ensilage cutter to a length of 1 to 3 inches. It was then passed over a vibrating, 40-mesh screen to remove fines and dirt. The

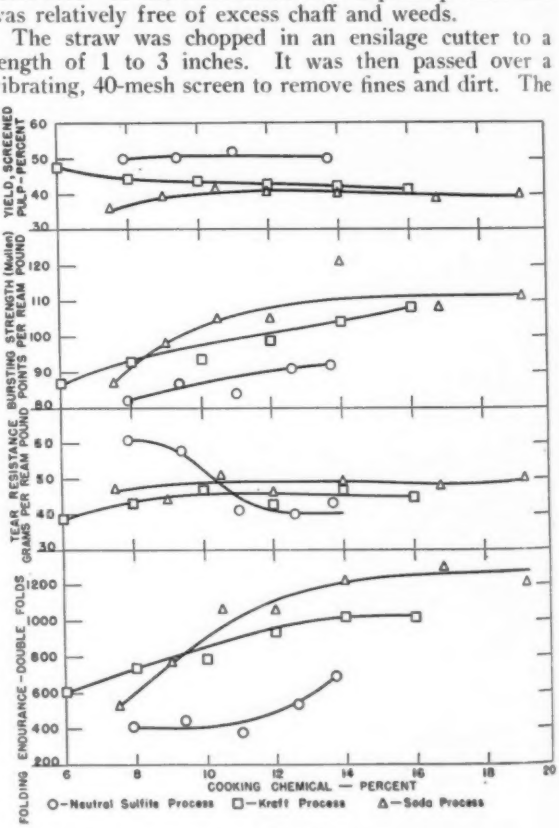

FIG. 1

Pulp yields and the bursting strength, tear resistance and folding endurance of straw pulps prepared by the soda, kraft, and neutral sulphite processes.

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fines and dirt varied from 0.76 to 1.41% of the air-dry straw, with an average loss of 1.06%.

The screened straw from several bales was mixed thoroughly, sampled for moisture and for chemical analysis, and bagged in units of 4,000 grams, air-dry. The proximate chemical analysis of this straw is given in Table I. The TAPPI methods and their modifications used in this analysis were described in a previous report *(1)*.

Preparation and Analysis of Pulps

The general procedures for pulping and pulp screening, for proximate analysis, and for determining the beating, sheetmaking, and strength characteristics were the same as those given in previous reports *(1, 2)*. All of the pulps were screened through an 8-cut, slotted screen plate, instead of through the 4-cut plate used in previous work, after it had been determined that the larger slots yielded only slightly larger amounts of screened pulp. Wherever other modifications of these procedures were used in the present work, they are described in the discussion on the method or test used.

The bleach consumption of the pulps, i. e., chlorine required to produce a brightness of 70% (Hunter reflectometer), was determined by the single-stage hypochlorite method on a 10-gram sample of the pulp. The large-scale bleaching was carried out on 2-pound samples of screened pulp in three stages: (1) chorination with chlorine water, constituting about 80% of the total chlorine demand, at room temperature and 4% consistency for 1 hour or until exhaustion of the chlorine, whichever came first, and washing the chlorinated pulp until free from acid; (2) treating the washed chlorinated pulp with 1% NaOH (basis unbleached pulp) at 12% consistency for 30 minutes at 80°C., and washing the pulp until free from alkali; and (3) bleaching the washed pulp with the remainder of the chlorine as hypochlorite at 12% consistency and 35 to 40°C., for 1 hour or until exhaustion of the chlorine, whichever came first, washing until free from hypochlorite, acidifying slightly with H_2SO_3, and washing the residual pulp until the washings were neutral.

The data on pulping, bleaching, and testing are given in Tables II to X and shown graphically in Figs. 1 and 2. TAPPI testing and analytical methods were used wherever possible. All of the analytical results are the mean of at least two determinations in good agreement.

Results and Discussion

Soda Pulp

It was shown in previous work *(1, 2)* that fairly good pulp could be produced from wheat straw by cooking the latter for 2 hours at 170°C. with 12 to 15% caustic soda. The ratio of total liquid to dry straw in those experiments was 8:1. This is considerably higher than the starting ratios used in commercial pulping, but it must be remembered that these experimental cooks were made with indirect heating; hence, no dilution due to condensed steam took place during the cooking.

In order to determine the effect of varying ratio of total liquid to straw, a series of cooks was made with

TABLE I.—PROXIMATE CHEMICAL ANALYSIS OF WHEAT STRAW

(All values, except moisture, are on the oven-dry basis.)

Constituent	Per Cent
Moisture	9.1
Ash	8.1
Alcohol-benzene (1:2) extractives	4.5
Hot water extractives	11.9
1 per cent NaOH extractives	44.1
Lignin	20.1
Pentosans	27.6
Cross and Bevan cellulose	49.1
Alpha-cellulose	34.8

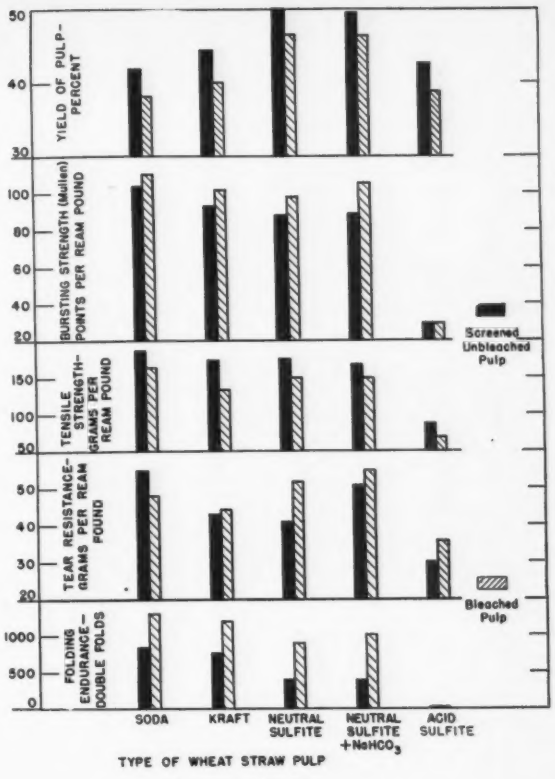

FIG. 2

Effects of bleaching on the yields and on the bursting and tensile strengths, tear resistance and folding endurance of straw pulps produced by different pulping processes.

ratios from 5:1 to 8:1, keeping all of the other cooking conditions constant. The results, given in Table II, show that, although there was no significant difference in the pulp yields and in the chemical and physical properties of the pulps, there was a trend toward better and stronger pulps with increasing ratio of total liquid to straw.

The ratio of 7:1 was selected for the remainder of the pulping experiments discussed in this report because this ratio provided the minimum quantity of liquid necessary to cover the packed straw in the autoclave. The other constant conditions selected were a cooking temperature of 170° C., corresponding to 100 p.s.i. steam pressure, and a cooking time of 2 hours at maximum temperature.

The soda process cooks made with 7.5 to 19.2 % of sodium hydroxide, based on the weight of moisture-free straw, are shown in Table III. The yields of crude pulp and screenings decreased regularly with increasing amounts of caustic soda used for pulping, whereas the yields of screened pulp showed but little change. The quality of the screened pulp, however, as indicated by decreased ash and lignin content, decreased permanganate number and chlorine consumption (to produce a brightness of 70) and by better physical strength characteristics, increased with the amounts of caustic soda used. On the basis of pulp yields and the physical and chemical properties of the pulps, it appeared that 12% sodium hydroxide, basis straw weight, was the minimum chemical requirement to produce a satisfactory pulp under the conditions of these experiments.

Kraft Pulp

The kraft pulps were made under the same cooking conditions as the soda pulps. The cooking chemical

TABLE II.—SODA PROCESS—EFFECTS OF TOTAL LIQUID TO SOLID RATIO

Cook Number	Cooking Conditions: Chemical [a] % NaOH	Chemical [a] %	Ratio, Liquid/Solid	Temp., °C.	Time, hr.	pH of Liquor: Fresh	pH of Liquor: Used	Pulp Yields [a]: Crude, %	Pulp Yields [a]: Screened, %	Pulp Yields [a]: Screenings, %	Pulp Yields [a]: Fines, %	Chemical Analyses [b]: Ash, %	Chemical Analyses [b]: Pentosans, %	Chemical Analyses [b]: Lignin, %	Chemical Analyses [b]: KMnO4 No.	Bleaching: Chlorine Consumption, [b] %	Bleaching: Fiber Loss, [b] %	Bleaching: Bleached Pulp Yield, [a] %	Beating and Strength Characteristics [c]: Time, min.	Freeness S.F., ml.	Basis Weight (25×40—500), lb.	Bursting Strength, lb. × 100 pts./rm.	Tensile Strength, g./ream pound	Tear Resistance, g./ream pound	Folding Endurance, double folds	Apparent Density, g./ml.
370																										
386	12.0	...	5:1	170	2	...	...	52.1	39.2	3.1	9.8	4.8	28.0	4.8	16.9	9.5	5.1	37.2	45	355	46	99	173	45	1004	0.98
371–383	12.0	...	6:1	170	2	...	...	52.0	39.4	2.7	9.9	4.7	29.0	5.8	17.1	10.0	3.8	37.9	45	350	46	105	187	44	1266	0.97
372–380	12.0	...	7:1	170	2	...	...	51.9	40.5	2.4	9.0	4.4	26.1	6.2	16.7	11.5	7.4	37.5	45	400	47	105	193	46	1052	0.98
373–377	12.0	...	8:1	170	2	...	...	51.1	39.8	2.6	8.7	3.9	26.1	5.0	17.0	10.1	4.3	38.1	45	395	46	112	191	48	1299	0.96
TABLE III.—SODA PROCESS—EFFECTS OF INCREASING CHEMICAL																											
374	7.5	...	5:1	170	2	...	9.4	59.0	35.8	12.3	10.9	7.0	25.5	11.2	31.7	19.7	3.9	34.4	45	485	46	87	164	47	517	1.03
375	9.0	...	6:1	170	2	...	9.3	55.6	38.8	6.4	10.4	5.9	26.9	9.1	27.3	15.7	3.4	37.5	45	455	46	98	170	44	755	0.89
376	10.5	...	7:1	170	2	...	9.8	53.0	41.1	4.0	7.9	5.2	29.2	7.6	24.4	11.4	5.1	39.0	30	500	46	105	184	51	1060	0.91
372–380	12.0	...	7:1	170	2	...	10.4	51.9	40.5	2.4	9.0	4.4	26.1	6.2	16.7	11.5	7.4	37.5	45	400	47	105	193	46	1052	0.98
384	14.0	...	7:1	170	2	...	10.7	49.4	39.8	1.4	8.2	3.1	30.9	4.7	14.6	8.6	5.8	37.5	45	330	46	121	192	49	1220	0.95
388	16.8	...	7:1	170	2	...	11.1	45.1	38.7	0.3	6.1	2.3	28.3	2.7	10.7	3.7	5.2	36.7	45	335	47	108	200	48	1295	0.95
389	19.2	...	8:1	170	2	...	11.1	45.0	39.5	0.2	6.3	2.9	27.8	3.6	8.8	3.6	6.3	37.0	45	375	45	111	183	50	1203	0.99
TABLE IV.—KRAFT PROCESS—EFFECTS OF INCREASING CHEMICAL																											
	NaOH	Na2S																								
394	4.0	1.9	7:1	170	2	...	9.2	60.1	47.9	3.8	8.4	7.9	23.4	11.7	49.4	38.7	11.5	42.4	60	385	46	87	155	39	597	0.79
393	5.3	2.6	7:1	170	2	...	9.8	57.8	44.4	1.8	11.6	6.7	26.5	9.0	36.0	21.6	10.4	39.8	45	395	46	93	173	43	733	0.91
390	6.7	3.2	7:1	170	2	...	10.0	54.3	43.7	1.5	9.1	6.0	29.9	4.7	17.1	9.6	10.7	38.2	45	375	47	94	178	47	780	1.03
391	8.0	3.9	7:1	170	2	...	10.5	53.1	42.8	0.7	9.6	5.4	26.1	3.9	12.7	9.1	7.3	39.5	45	335	49	99	181	43	935	1.08
392	9.3	4.5	7:1	170	2	...	10.5	50.4	42.6	0.5	7.3	6.7	26.1	6.6	23.9	16.0	16.9	36.3	45	350	46	104	188	47	1019	0.91
395	10.7	5.2	7:1	170	2	...	10.6	48.3	41.4	0.4	6.5	3.5	28.8	3.0	8.9	5.1	4.1	39.7	45	340	47	108	200	45	1016	1.00
TABLE V.—AMMONIA PROCESS—EFFECTS OF INCREASING CHEMICAL																											
	NH3																									
431	56	...	7:1	140	7	11.6	10.7	66.9 [d]	54.6	3.1	9.2	6.4	25.6	16.0	61.2	41.8	15.2	46.3	60	475	47	80	145	45	148	0.87
432	112	...	7:1	140	7	12.1	11.3	63.3	38.0	14.1	11.2	7.3	25.1	11.7	40.6	29.0	11.8	33.5	60	425	45	83	138	44	365	0.99
433	168	...	7:1	140	7	...	...	60.2	42.3	11.0	6.9	8.5	25.0	8.1	31.9	21.0	13.0	36.8	60	380	47	84	162	42	491	0.96
434	224	...	9:1	110	15	...	...	59.4 [d]	44.0	4.1	11.3	5.7	30.1	6.8	22.1	15.2	7.7	40.6	60	415	46	93	162	43	662	0.85
TABLE VI.—NEUTRAL SULPHITE PROCESS—EFFECTS OF INCREASING CHEMICAL																											
	Na2SO3																									
406	7.9	...	7:1	170	2	9.0	5.2	57.8	49.9	2.3	5.6	8.3	23.3	10.7	42.0	22.7	5.2	47.3	60	410	46	82	158	61	405	0.85
405	9.4	...	7:1	170	2	9.2	5.7	56.1	50.2	0.8	5.1	8.4	23.0	8.9	25.2	12.4	4.4	48.0	60	400	47	87	159	58	438	0.90
404	11.0	...	7:1	170	2	8.9	7.0	57.2	51.5	0.5	5.2	8.6	25.5	5.7	14.7	8.0	4.9	49.0	60	345	47	84	154	41	365	0.86
397	12.6	...	7:1	170	2	8.6	6.9	55.6	49.2	0.9	5.5	9.6	24.4	4.3	13.1	6.7	7.1	45.7	60	320	46	91	159	40	529	0.85
396	13.7	...	7:1	170	2	8.6	7.0	57.4	49.9	0.8	6.7	8.6	28.1	3.9	11.4	5.2	7.8	46.0	60	325	46	92	176	43	683	0.80
TABLE VII.—NEUTRAL SULPHITE PROCESS—EFFECTS OF ALKALINE COMPOUNDS																											
	Na2SO3	NaHCO3																								
397	12.6	...	7:1	170	2	8.6	6.9	55.6	49.2	0.9	5.5	9.6	24.4	4.3	13.1	6.7	7.1	45.7	60	320	46	91	159	40	529	0.85
407	10.1	3.4	7:1	170	2	8.8	8.2	57.4	50.7	2.3	4.4	8.8	28.1	5.6	12.9	5.5	7.5	46.9	60	355	47	94	183	48	482	0.89
408	8.8	5.0	7:1	170	2	9.1	8.6	57.3	49.7	1.5	6.1	8.4	26.0	8.0	14.4	6.8	5.8	46.8	60	340	46	93	177	46	712	0.92
409	7.6	6.7	7:1	170	2	8.7	8.3	57.4	49.5	2.6	5.3	8.8	29.3	9.2	20.3	9.9	4.4	47.3	60	395	46	91	168	40	466	0.85
410	6.3	8.4	7:1	170	2	8.7	8.6	58.3	47.1	4.2	7.0	8.4	24.7	12.1	24.5	13.0	9.1	42.8	60	390	47	94	158	43	370	0.82
411	5.0	10.1	7:1	170	2	8.4	8.6	61.8	44.1	6.3	11.4	8.2	25.6	13.2	28.3	17.3	9.5	39.9	60	450	47	91	178	48	534	0.83
	Na2SO3	NaOH																								
398	10.1	1.6	7:1	170	2	11.7	8.0	55.6	48.9	1.4	5.3	9.5	26.5	4.0	11.4	5.8	5.1	46.4	60	350	46	83	158	53	338	0.81
		Na2CO3																								
399	10.1	2.1	7:1	170	2	10.1	7.6	55.5	49.5	1.0	5.0	9.8	25.3	4.8	12.6	7.4	6.3	46.4	60	375	46	81	148	52	291	0.77
		Na2S																								
401	10.1	1.6	7:1	170	2	11.5	7.9	57.6	49.0	2.0	6.6	9.7	25.7	8.1	20.6	13.4	6.7	45.7	60	355	47	85	159	55	356	0.86

[a] Basis original moisture-free straw. [b] Basis moisture-free unbleached, screened pulp. [c] All values at or near maximum bursting strength. [d] Crude pulp defibered in beater (0.0003 in. clearance between roll and bedplate before screening).

TABLE VIII.—BISULPHITE PROCESS (MAGNESIUM)—EFFECTS OF INCREASING CHEMICAL AND INCREASING COMBINED SO_2

Cook Number	Cooking Conditions: Chemical [a] (Acid Sulphite Liquor—5% total SO_2, 1% combined SO_2) % MgO	% SO_2	Ratio, Sulphite Liquor/Solid [d]	Temp., °C.	Time, hr.	pH of Liquor: Fresh	Used	Pulp Yields [a]: Crude, %	Screened, %	Screenings, %	Fines, %	Chemical Analyses [b]: Ash, %	Pentosans, %	Lignin, %	$KMnO_4$ No.	Bleaching: Chlorine Consumption, %	Fiber Loss, %	Bleached Pulp Yield, %	Beating and Strength Characteristics [c]: Time, min.	Freeness S.R., ml.	Basis Weight (25×40—500), lb.	Bursting Strength, pts./rm. lb. × 100	Tensile Strength, g./ream pound	Tear Resistance, g./ream pound	Folding Endurance, double folds	Apparent Density, g./ml.
412	1.9	15.0	3:1	140	2.5	...	...	52.7	34.5	13.0	5.2	8.7	17.4	13.2	44.0	24.9	8.7	31.5	60	490	46	38	106	29	5	0.86
419	1.9	15.0	3:1	140	3.5	1.8	2.1	51.0	37.2	6.0	7.8	8.9	9.2	13.0	47.3	27.0	11.8	32.8	60	500	46	22	69	21	1	0.85
413	2.5	20.0	4:1	140	2.5	2.4	2.3	52.0	39.5	6.6	5.9	7.3	11.7	13.0	45.0	22.9	9.4	35.8	60	495	47	34	87	33	3	0.84
417	2.5	20.0	4:1	140	3.5	1.8	1.9	50.5	37.7	2.8	10.0	9.0	7.6	11.7	46.5	23.6	10.3	33.8	60	545	47	24	72	24	1	0.85
414	3.2	25.0	5:1	140	2.5	2.0	2.6	50.1	41.9	1.8	6.4	9.1	11.2	10.8	43.4	20.1	10.0	37.7	60	455	47	35	80	26	3	0.89
420	3.8	30.0	6:1	140	2.5	1.7	2.2	49.5	42.1	0.6	6.8	9.0	10.5	8.7	39.8	16.3	8.6	38.5	60	525	47	35	99	36	4	0.86
421	[e] 5.7	30.0	6:1	140	2.5	1.9	2.5	49.8	43.8	0.0	6.0	8.7	11.7	7.2	27.8	10.4	4.6	41.8	60	540	48	33	103	35	3	0.88
422	[f] 7.6	30.0	6:1	140	2.5	2.1	3.3	51.0	44.0	0.1	6.9	9.0	13.8	6.1	25.2	10.9	6.1	41.3	60	580	47	42	108	30	5	0.99
423	[g] 9.5	30.0	6:1	140	2.5	2.3	3.4	50.2	44.6	0.0	5.6	8.0	15.4	5.4	22.1	6.8	5.2	42.3	60	510	47	48	116	35	20	1.03

TABLE IX.—BISULPHITE PROCESS (AMMONIUM)—EFFECTS OF INCREASING CHEMICAL

	(5% total SO_2, 1.25% combined SO_2) NH_3	SO_2																								
424	2.7	20.0	4:1	140	2.5	1.9	1.6	50.1	42.2	0.8	7.1	9.2	11.8	9.8	40.7	15.6	8.8	38.5	60	545	47	37	90	34	5	0.93
428	3.3	25.0	5:1	140	2.5	1.9	2.2	49.4	42.7	0.1	6.6	8.5	10.4	8.6	32.4	13.3	6.8	39.8	60	560	47	36	97	41	7	0.92
427	4.0	30.0	6:1	140	2.5	1.9	2.3	49.4	42.6	0.1	6.7	8.3	10.7	7.9	30.2	11.6	5.4	40.3	60	585	47	35	100	30	8	0.93

[a] Basis original moisture-free straw. [b] Basis moisture-free unbleached, screened pulp. [c] All values at or near maximum bursting strength. [d] Ratio total liquid to solid, 7:1. [e] Cooking acid 1.5% combined SO_2. [f] Cooking acid 2.0% combined SO_2. [g] Cooking acid 2.5% combined SO_2.

TABLE X.—ALL PROCESSES—EFFECTS OF BLEACHING

Cook Number	Cooking Conditions: Chemical [a] % NaOH	%	Ratio, Liquid/Solid	Temp., °C.	Time, hr.	pH of Liquor: Fresh	Used	Pulp Yields [a]: Crude, %	Screened, %	Screenings, %	Fines, %	Chemical Analyses [b]: Ash, %	Pentosans, %	Lignin, %	$KMnO_4$ No.	Bleaching: Chlorine Consumption, %	Brightness, [d] %	Fiber Loss, %	Bleached Pulp Yield, %	Beating and Strength Characteristics [c]: Time, min.	Freeness S.R., ml.	Basis Weight (25×40—500), lb.	Bursting Strength, pts./rm. lb. × 100	Tensile Strength, g./ream opund	Tear Resistance, g./ream opund	Folding Endurance, double folds	Apparent Density, g./ml.
380	12.0	...	7:1	170	2	...	10.4	52.0	42.0	2.6	7.4	4.7	23.2	6.8	17.5		28		...	30	505	46	104	188	55	814	0.92
380 Bl.												2.5	27.1	3.4	..	7.8	77	9.0	38.2	30	360	46	110	163	48	1294	1.06
393	NaOH 5.3	Na_2S 2.6	7:1	170	2	...	9.8	57.8	44.4	1.8	11.6	6.7	26.5	9.0	36.0		18		...	45	395	46	93	173	43	733	0.91
393 Bl.												5.0	26.7	2.5	...	18.0	71	9.5	40.2	45	290	46	102	134	44	1170	0.95
396	Na_2SO_3 13.7	...	7:1	170	2	8.6	7.0	57.4	49.9	0.8	6.7	8.6	28.1	3.9	11.4		39		...	45	405	47	88	176	41	472	0.81
396 Bl.												6.9	24.0	2.9	...	4.4	74	6.6	46.6	45	325	49	98	151	52	884	1.00
409	Na_2SO_3 7.6	$NaHCO_3$ 6.7	7:1	170	2	8.7	8.3	57.4	49.5	2.6	5.3	8.8	29.3	9.2	20.3		26		...	45	460	46	89	167	51	388	0.85
409 Bl.												7.1	25.6	3.5	...	7.0	71	6.5	46.3	45	435	46	95	149	55	1013	1.12
415	MgO 3.8	SO_2 30.0	6:1	140	2.5	1.8	1.9	49.4	42.6	0.6	6.2	9.7	...	..	40.3		29		...	45	605	36	29	89	30	7	0.83
415 Bl.												9.1	12.8	2.2	...	15.6	80	9.2	38.7	45	495	47	29	69	36	6	0.89

[a] Basis original moisture-free straw. [b] Basis moisture-free unbleached, screened pulp. [c] All values at or near maximum bursting strength. [d] Hunter reflectometer.

consisted of 2 parts sodium hydroxide to 1 part sodium sulphide, and the total amounts used varied from 6 to 16% of the weight of dry straw. The results are given in Table IV. The crude and screened pulps and screenings all showed a decrease in yield with increase of cooking chemical. The yields of screened pulp were somewhat larger and the yields of screenings slightly smaller than those obtained by the soda process under comparable conditions. The chemical constants of the kraft pulps, such as lignin, ash, and pentosan contents were approximately the same as those of the corresponding soda pulps, but the chlorine requirements of the kraft pulps for reaching a brightness of 70 were somewhat greater. The strength properties of the kraft pulps were only slightly lower than those of the corresponding soda pulps. Cooking with 12% kraft chemicals is indicated by these data as the minimum requirement to produce a satisfactory kraft pulp.

Ammonia Pulp

The possibilities of pulping plant materials with a volatile base, such as ammonia, created some interest several years ago *(3, 4)*. A number of cooks with aqueous ammonia solutions as the pulping agents were therefore included in this series of experiments. The data on these cooks are given in Table V. The amounts of ammonia as NH_3 varied from 56 to 224% of the dry straw. Lower cooking temperatures for longer periods were used on account of the high pressures produced in the autoclave by the volatile base. The high liquid to solid ratio of 9:1 in cook 434 was necessitated by the large quantity of aqueous, 28% ammonia solution used.

The yields of crude and screened pulp and screenings decreased with increasing amounts of ammonia used. The yields were higher than those obtained by the soda and kraft processes, but the ammonia-cooked pulps were relatively undercooked, and weak. The pulp obtained with 224% ammonia had strength properties approximating those of the pulps produced with 9% sodium hydroxide or with 8% kraft chemicals. No attempt was made in these experiments to determine the actual amounts of ammonia consumed in cooking or to recover the unused ammonia. On the basis of these preliminary results, ammonia does not show much promise as a practical pulping agent.

Neutral Sulphite Pulp

The data on the neutral sulphite cooks made with 7.9 to 13.7% sodium sulphite (equivalent to 5.0 to 8.7% sodium hydroxide) are shown in Table VI. Apparently, the outstanding characteristic of these cooks is the high yield of screened pulp produced. The relatively low amounts of screenings obtained indicated that these pulps were fairly well cooked. The sodium sulphite pulps had fairly uniform ash contents which were larger than those of the alkali pulps. The lignin content, permanganate number, and chlorine consumption decreased regularly with the increasing amounts of sodium sulphite used. Compared on the basis of equivalent amounts of cooking chemical, (NaOH basis), the neutral sulphite pulps contained less lignin than the alkali pulps. The pentosan contents of the neutral sulphite pulps appeared to be slightly lower than those of the soda and kraft pulps. However, due to the higher yields of pulp produced, the total pentosan loss in pulping was smaller in the neutral sulphite process.

In general, the sodium sulphite pulps had somewhat lower strength properties than the alkali pulps. When compared on the basis of equivalent amounts of cooking chemical, however, little difference was found in the strength values of the different pulps. The neutral sulphite pulps were a little harder than the alkali pulps and required somewhat longer beating periods to reach the maximum bursting strength. The bulking characteristics of the neutral sulphite pulps were better, as indicated by the lower apparent densities of the handsheets.

It is well known that an alkaline salt such as sodium carbonate or bicarbonate is used in addition to sodium sulphite in the semichemical pulping of wood. A series of cooks was therefore made in which sodium bicarbonate was substituted for part of the sodium sulphite, keeping the total amount of chemical equivalent on the basis of sodium hydroxide to 8% of the weight of dry straw. The results are given in Table VII. It is evident from these data that the increased substitution of sodium bicarbonate for the sulphite resulted in little change in the yields of crude pulp, but in slightly decreased yields of screened pulp and in larger amounts of screenings. The ash content was apparently unaffected, but the lignin content, permanganate number, and bleach consumption of the pulp increased with increased bicarbonate. The strength properties of the pulps were practically unaffected by the substitution of bicarbonate for sulphite, in the amounts used in these experiments.

The substitution of 20% of the sodium sulphite, on the equivalent sodium hydroxide basis, by sodium hydroxide, sodium carbonate, or sodium sulphide gave results similar, in general, to those obtained with an equivalent amount of sodium bicarbonate (cook 407). The use of sodium sulphide gave a pulp with a higher lignin content than those produced with the other alkaline substitutes.

Magnesium Bisulphite Pulp

The results on pulping wheat straw with varying amounts of magnesium acid sulphite liquor are given in Table VIII. These cooks were made for 2.5 and 3.5 hours at 140° C. (equivalent to 40 p.s.i. steam pressure). The ratio of total liquid to straw and the techniques of cooking and handling the pulps were the same as for the alkaline processes.

The yields of crude pulp and of screenings decreased regularly, while the yields of screened pulp increased with the increase in pulping chemicals. The screened pulp yields were intermediate between those obtained by the soda and kraft processes. The ash contents of the acid sulphite pulps were high and fairly constant while the lignin and pentosan contents decreased with increasing cooking chemicals. These pulps were all rather hard and of relatively low strength values which were not greatly affected by variation in the amounts of chemicals used for pulping. An increase in cooking time, with the other pulping conditions held constant, resulted in weaker pulps with lower pentosan and lignin contents but with higher permanganate numbers and bleach requirements.

When the total SO_2 was held constant and the combined SO_2 of the cooking liquor was increased from 1% to 2.5% (cooks 420 to 423) the yields of crude and screened pulp increased with practically complete elimination of screenings. The pentosan content of the pulp increased and the lignin content, permanganate number, and chlorine consumption decreased with the larger combined SO_2 content of the cooking liquor. The strength properties of these pulps also increased with increasing combined SO_2.

Ammonium Bisulphite Pulp

The ammonium bisulphite process is used for the commercial production of wood pulp in a Scandinavian mill and in one American mill. With the idea in mind that perhaps the ammonium acid sulphites might work

better than the usual calcium or magnesium bisulphite liquors on straw, a brief series of cooks was made with the volatile base liquors. The data in Table IX show, however, that the ammonium bisulphite liquors gave essentially the same results on wheat straw that were obtained with magnesium bisulphites under similar pulping conditions.

General Considerations

Alkali Processes

Each of the alkaline processes considered possesses some advantage over the others in the production of pulp from wheat straw. This is illustrated by the curves in Fig. 1 in which the screened pulp yields and strength properties are plotted against the amounts of chemical used in preparing these pulps, with the other pulping conditions kept constant.

It is easily evident that the largest pulp yields are produced by the neutral sulphite process and the smallest by the soda process. The kraft pulp yields are somewhat higher than those produced by soda pulping. However, the strength characteristics are in the reverse order, with soda pulps being generally the strongest, the neutral sulphite pulps the weakest, and the kraft pulps having intermediate strength properties. The bursting and tensile strengths and the folding endurance of the alkali straw pulps are higher than those of commercial softwood sulphite pulp, while the properties of the neutral sulphite straw pulp approach closely those of the commercial sulphite wood pulp *(2)*. It may be noted that the tear resistance of the straw pulps was fairly uniform regardless of the types and amounts of alkaline chemicals used for pulping. The uniform but low tear resistance of these pulps is due mainly to the relative shortness of the straw fibers.

Acid Processes

The straw pulps produced with magnesium or ammonium bisulphite were obtained in yields intermediate between those of the soda process and kraft process pulps. The strength properties of the bisulphite pulps were considerably lower than those of the pulps obtained with the alkaline or neutral pulping agents. Perhaps the high siliceous ash contents of the acid pulps are responsible for their relative brittleness. Possibly also the hardness of these pulps and their resistance to hydration, as evidenced by the relatively long beating periods required, may be due to their low pentosan contents. At any rate, the data show that acid pulping processes are not suitable for the production of satisfactory papermaking pulps from wheat straw or, by analogy, from other high-silica agricultural residues.

Bleached Straw Pulps

The effects of bleaching on the straw pulps produced by the various processes are given in Table X and illustrated graphically in Fig. 2. The pulps were bleached by a three-stage process consisting of low consistency (4%) chlorination, followed by high consistency (12%) alkali extraction and, finally, by high consistency bleaching with hypochlorite, using the total amounts of chlorine indicated in the table. The pulps used for these bleaching tests were not necessarily the optimum pulps produced by the various pulping processes.

It is apparent that the loss in yield on bleaching was greatest for the alkali and acid process pulps and least for the neutral sulphite pulps. All of the bleached pulps showed increased bursting strength, tear resistance and folding endurance, and decreased tensile strength. It is interesting to note the large increase in folding endurance resulting from bleaching the neutral sulphite pulps. It may thus be possible to produce high-strength, as well as high-yield pulps, by the neutral sulphite process.

Summary and Conclusions

Wheat straw was pulped by the soda, kraft, ammonia, neutral sulphite, magnesium bisulphite, and ammonium bisulphite processes, and the resulting pulps were analyzed chemically and tested for their strength characteristics.

The following conclusions may be drawn from the data obtained in this work:

1. Pulping with ammonia is impractical, under the conditions employed in these experiments, mainly on account of the large amounts of this reagent required.
2. The acid pulping processes produced relatively weak and brittle pulps from straw and they are apparently unsuitable for use on agricultural residues of high silica content.
3. The neutral sulphite process produced the highest pulp yields from wheat straw, and the kraft process gave somewhat higher yields than the soda process.
4. The strongest pulps were produced by the soda process, followed closely by the kraft pulps, and then by the neutral sulphite pulps.
5. Bleaching resulted in a lower loss of fiber from neutral sulphite pulp than from soda or kraft pulp.
6. The bleached agricultural residue pulps had better strength properties, with the exception of tensile strength, than the unbleached pulps, and the largest increase in strength on bleaching was evidenced by the neutral sulphite pulps.

Literature Cited

1. Aronovsky, S. I., Nelson, G. H., and Lathrop, E. C., Agricultural Residue Pulps—Bleaching Studies on Straw Pulps. *Paper Trade J.* 117, No. 25: 38-48 (December 16, 1943).
2. Aronovsky, S. I., Rhodes, Alan, and Lathrop, E. C., Agricultural Residue Pulps—Comparison with Typical Wood Pulps. *Paper Trade J.* 124, No. 13: 49-55 (March 27, 1947).
3. Hixon, R. M., Peterson, C. J., and Werkman, C. H., Process of Pulping Plant Tissues by Means of a Volatile Base. U. S. patent 1,802,715 (April 28, 1931).
4. Kovats, L., Cellulose. Hungarian patent 119,466 (November 15, 1938).

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Dear Mr. Macdonald, Editor, Technical Section:

We have noted with interest the article "Application of Statistical Methods to Paper Testing Procedures. Part I Folding Endurance" by L. K. Reitz and F. J. Sillay, in the April 22, issue of the Paper Trade Journal concerning the comparison between the test results of the Schopper type and the M.I.T. folding endurance testers. We believe the article furnishes valuable information to the industry and sheds light on the ever present problem of comparability in test results.

There is, however, one portion of the article which gives us great concern and that is the inference that the Schopper type instrument is no longer available nor can the present instruments now in use be recalibrated. Persons interested in the Schopper instrument may be misled into abandoning their interest, whereas, in reality these instruments and their repairs are available from Testing Machines Inc. The imported instruments are of course no longer obtainable but we have, since the war, been offering a Schopper type instrument made in strict accordance with the design and principles of the original Schopper models. Some improvements have been made but our machine is calibrated to give results comparable to the German instrument and they are presently being used side by side.

We have found from past experience that articles appearing in the Paper Trade Journal many times results in inquiries concerning the instruments mentioned being sent to their authors. We feel, therefore, that possibly on the information received from this article, interested persons will believe that the Schopper instrument is no longer available. Many mills are presently using the Schopper tester, and as is known it is a rather difficult matter to completely change their statistical control methods. They would appreciate knowing that their present instruments can be repaired and that new instruments are available.

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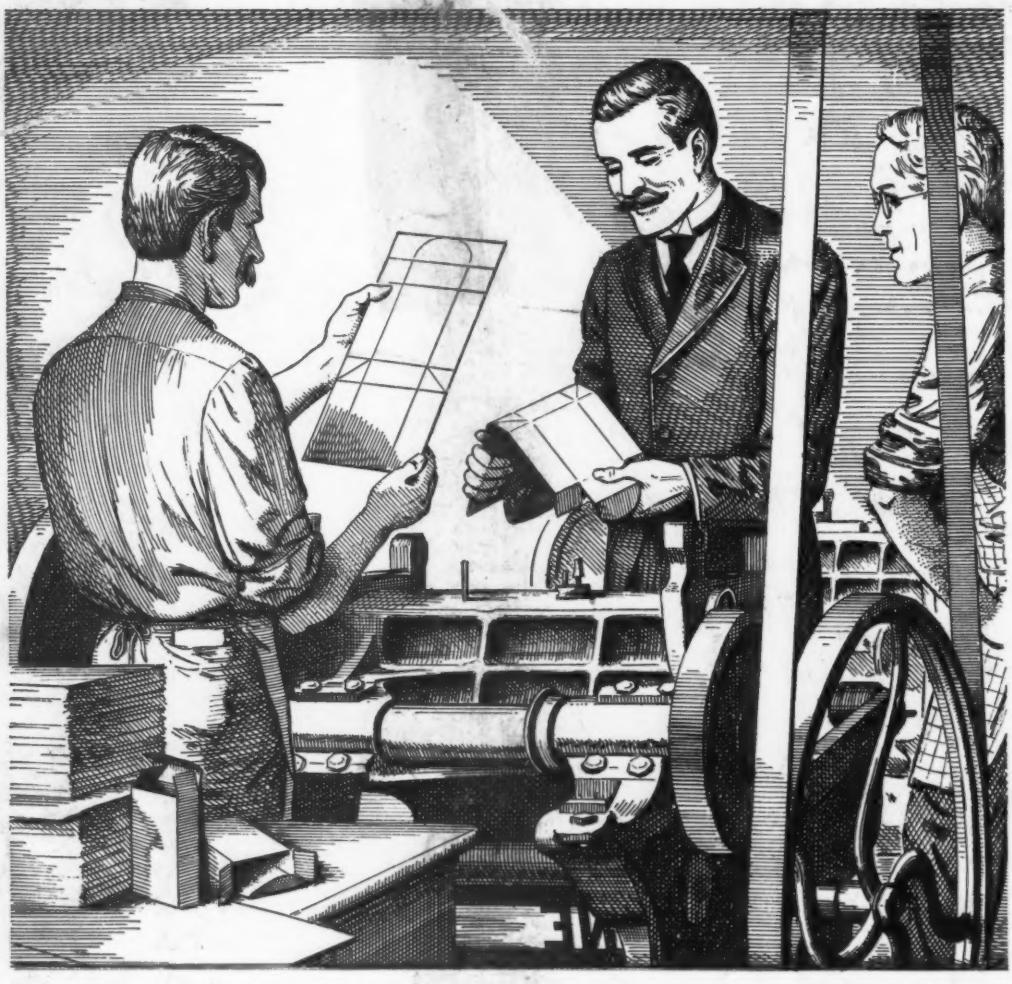

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